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Communication aspects of inclusive business models: Strategies, innovations, prospects

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Abstract. The relevance of the research problem was determined by the need to understand the communication aspects of inclusiveness as a component of corporate social responsibility and a tool for the moral transformation of entrepreneurship in the context of military and socio-economic challenges. The aim of the study was to conceptualise the communication strategies of inclusive business models and analyse the peculiarities of their implementation using the example of Ukrainian initiatives in 2020-2024. The study used methods of systematic analysis to determine the structure and functions of inclusive business models, as well as generalisation, case studies and comparative analysis to identify innovative approaches to the development of strategic communications in the field of inclusive entrepreneurship. The results showed that inclusive business communication strategies are a modern form of public representation of socially responsible entrepreneurship. They combine economic expediency with social integration, promote the formation of partnerships between business and the public, increase the level of trust in companies and strengthen the reputation of brands. Effective communication tools include the principles of openness and transparency, the creation of inclusive product and service design, the use of ethical media practices and social campaigns targeting vulnerable groups. It has been proven that systematic communication strengthens the social capital of organisations, contributes to the expansion of their influence and increases the level of social cohesion. Analysis of Ukrainian cases showed that the effectiveness of inclusive business projects depended on the alignment of corporate strategy with society's expectations, cultural context and international standards of sustainable development. The practical significance of the study lay in the possibility of applying its results to develop communication strategies for companies seeking to combine business efficiency with social responsibility and implement inclusive approaches in corporate culture

Keywords: inclusion; communication strategies; social responsibility; reputational capital; brand image

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Introduction

In Ukraine's transformational development amid military challenges and economic instability, the analysis of communication aspects of inclusive entrepreneurship has become increasingly important, as public communication has been a key resource in building trust, mobilising resources and creating social opportunities for vulnerable groups. A review of the scientific literature allowed to identify several areas of research that formed the basis for this work. L.V. Frolova & S.O. Yermak (2021) pointed to the role of corporate social responsibility as a factor in the transformation of business practices and emphasised the need to integrate inclusive approaches into business strategies. A. Kramarenko & A. Kvitka (2023) analysed the mechanisms of interaction between business and local communities and proved that targeted communication measures increased the level of involvement of vulnerable groups in economic activity. O.V. Brazhko & A.O. Nadezhdenko (2024) examined the legal and regulatory aspects of supporting social initiatives, emphasising that without clear representation and communication, legal support did not always translate into sustainable social practices. The authors emphasise that the lack of clear communication mechanisms between state institutions, business and the public reduces the effectiveness of even well-designed regulatory instruments. S.M. Boldyzhar & I.V. Khokhlova (2024) emphasised the link between companies' reputation strategies and the audience's perception of inclusive initiatives, showing that authentic messages contributed to a long-term positive response from stakeholders. The study proves that formal or declarative communication, on the contrary, undermines trust and reduces the social impact of entrepreneurial initiatives.

E. Borges *et al.* (2023) focused on the impact of digital communication channels on the transparency of corporate communications, demonstrating that openness and systematic disclosure of information significantly increase the effectiveness of social and sustainability campaigns. The authors also emphasise that the interactivity of digital platforms and the two-way nature of communication contribute to stakeholder engagement and the formation of long-term trust in companies that implement sustainable development principles. Z. Li *et al.* (2023) analysed the structure of corporate social responsibility (CSR) communications on social media and concluded that clearly structured, targeted messages stimulate higher communicative activity among consumers. The study also showed that the emotional component of CSR communications acts as an important mediator between the informational content of messages and the behavioural responses of the audience, enhancing its engagement and loyalty. A.D. Baranetska (2024) drew attention to the ethical dimensions of inclusive communications in media discourse, emphasising that adherence to the principles of clear language and respect for different social groups reduces the risks of manipulation.

The author also notes that ethical inclusive communication is an important prerequisite for building social trust and increasing the responsibility of both the media and business structures. O. Sobko (2024) and V. Pylypenko *et al.* (2024) in their studies on Ukrainian practices of social responsibility and social entrepreneurship outlined applied models for implementing inclusive approaches in business in times of crisis. The authors emphasised that the effectiveness of such models largely depends on the alignment of corporate strategies with regional socio-economic needs and the level of development of local communities, especially in conditions of war and economic transformation.

A comparison of studies revealed the existence of publications covering various dimensions of inclusiveness: from legal and management decisions to communication practices. However, the Ukrainian scientific paradigm lacked sufficient systematisation of communication tools as a separate area of research. Analysis of existing approaches revealed gaps related to the limited use of empirical case methods to assess the impact of specific communication strategies on engaging vulnerable audiences. The aim of the study was to develop a theoretical and methodological framework for identifying and classifying communication strategies of inclusive business models in Ukraine and to form a basis for further empirical analysis of their effectiveness in specific regions and sectors of the economy.

Materials and Methods

The methodological basis of the study was a combination of systemic and comparative approaches, which provided a comprehensive view of the communication aspects of inclusive business. The use of a systemic approach made it possible to consider inclusive business as an integrated system in which communication strategies interact with social, economic and cultural factors. In the course of the work, the structural elements of the communication system of inclusive entrepreneurship (messages, channels, audiences, effects of influence) were identified and their interaction within the organisational model was analysed. The comparative approach made it possible to compare the communication features of socially responsible entrepreneurship with traditional business. To achieve the set goal, methods of analysis and synthesis were used, which helped to generalise the main scientific provisions and define the conceptual boundaries of the study. In particular, the analysis method was used to study contemporary publications from 2020–2025 on the topics of inclusive business and socially responsible entrepreneurship. Scientific works on inclusive and social entrepreneurship were analysed, including the study by C.K. Prahalad & S.L. Hart (2002) to determine the economic basis of inclusive models and the concept of "fortune at the bottom of the pyramid"; the work of M. Yunus *et al.* (2010) to understand the principles of building sustainable social business models.

The works of E. Likoko & J. Kini (2017), A. Kramarenko & A. Kvitka (2023), S.M. Boldyzhar & I.V. Khokhlova (2024) were also analysed to examine the characteristics of inclusive and socially responsible entrepreneurship (with a focus on the Ukrainian context).

In the study, the factual material was supplemented by an analysis of information obtained from open web resources representing Ukrainian inclusive enterprises. In particular, attention was paid to their official websites and social media accounts. A special place is given to the use of the case study method, which allowed for a detailed examination of successful examples of Ukrainian inclusive businesses, in particular Lady Di Atelier (n.d.), Veterano Pizza (n.d.) and the inclusive bakery Good Bread (n.d.). The social enterprise VBrani (n.d.) and the inclusive showroom Walnut House (n.d.) were also analysed, which made it possible to comprehensively reveal the peculiarities of implementing inclusive business models in the Ukrainian context. The selection of these cases was determined by their significant social importance, transparency in communicating social values, active involvement of vulnerable groups (including veterans, people with disabilities, women in difficult life circumstances), as well as the diversity of approaches to multi-vector interaction with the target audience. The results obtained were interpreted taking into account the relevant theoretical provisions set out in the analysed scientific sources. This provides the opportunity for verification and replication of the study by other researchers, provided that a similar sample of information resources and cases is used.

Results

Socially responsible entrepreneurship has certain communication specifics, which can be explained primarily by the fact that it is a relatively new but rapidly growing segment of Ukrainian civil society. It combines the features of traditional entrepreneurial activity and public initiatives aimed at solving socially significant problems – from unemployment and ecology to the inclusion of vulnerable groups of the population. Its fundamental difference lies in the fact that making a profit is not an end in itself, but is seen as a tool for implementing a social mission. The spread of the socially responsible entrepreneurship model in Ukraine is taking place in conditions of martial law, economic instability and profound social change, which necessitates new forms of sustainability, innovation and trust. In these conditions, the

communication activities of socially responsible enterprises are no less important than production or financial activities, because it is through effective communication that a business entity gains the opportunity to obtain support, explain its value to society and integrate into the public sphere.

The communication specificity of socially responsible entrepreneurship lies, first and foremost, in the multi-vector nature of its audiences. Unlike traditional businesses, where the key goal is customer sales, a socially responsible enterprise deals with many groups of interaction – philanthropists, volunteers, government agencies, the media, local communities, as well as those who are the direct objects of support (e.g., people with disabilities or veterans). Each of these audiences requires a separate communication strategy, taking into account their values, needs, characteristics, and receptivity to messages. These conclusions are based on the provisions set out in the works of E. Likoko & J. Kini (2017), L.V. Frolova & S.O. Yermak (2021), A. Kramarenko & A. Kvitka (2023).

The primary characteristics of socially responsible entrepreneurship communications are consistency and ethics. Namely, the creation of a long-term communication platform that incorporates the mission of a socially responsible business entity, its positioning, tone of voice, formats for presenting information, channels for interacting with the audience, and adherence to the principles of respect for human dignity, especially in cases involving vulnerable groups. An equally important characteristic is the multi-vector nature of audiences (the number and diversity of contact groups with which interaction takes place). This also includes transparency, according to which entrepreneurship can submit public reports, including on sources of funding. Secondary characteristics include rhetoric (emphasis on solidarity, support, mutual assistance); empathy (the ability to engage the audience through emotional resonance) and authenticity (the uniqueness of the brand's "voice" based on real experience and sincerity). Comparing the communications of socially responsible entrepreneurship with traditional business, using the comparative method, it has been established that social enterprises are distinguished by more emotionally charged and ethically oriented messages, focusing on community values. At the same time, traditional businesses mostly focus on consumer benefits and achieving commercial results. (Table 1).

Table 1. Key characteristics of socially responsible entrepreneurship and traditional business (comparative aspect)

Traditional business	Characteristic	Socially responsible entrepreneurship
Profit is paramount	Purpose of communication	Social change is paramount
Clearly defined target audience (TA)	Audience	Multidimensional audience
Limited circle, determined by the TA	Interaction groups	Numerous: philanthropists, volunteers, authorities, media, local communities, inclusive groups

Continued Table 1.

Traditional business	Characteristic	Socially responsible entrepreneurship
Universal	Nature of communication strategy	Individualised for each target audience
Guarantees profit	Systematicity	Ensures consistency in communication
Buy a product	Rhetoric	Doing good together
Brand anonymity	Authenticity	Real stories and sincerity
Data confidentiality	Transparency	Openness in everything, transparency
Focus on benefits	Ethics	Emphasis on respect and dignity

Source: developed by the authors based on their own conclusions

Based on a comparative analysis of the key characteristics of traditional business and socially responsible entrepreneurship, it has been concluded that these two types of production activities differ significantly in terms of communication style and nature. Since socially responsible enterprises that implement inclusive business models in their activities often face a number of socially determined communication challenges, it is worth pointing out the most common ones, such as insufficient recognition or merging with other business entities difficulty in formulating a mission in simple and understandable language; risk of stigmatisation when covering topics such as disability, mental health issues, poverty, and traumatic experiences; limited resources for developing a professional media strategy. Looking at how communication challenges will affect the activities of socially responsible enterprises reveals that they have consequences and can even lead to certain threats. One of the most significant is the loss of trust and damage to reputation, which can result from the dissemination of false information, slander, insults, distortion of facts, or other negative actions that violate honour and dignity. At the same time, effective communication is the most powerful tool for social relations, as it allows to build trust, attract grant support, obtain crowdfunding, activate communities, and change public opinion. That is why there is a growing need to introduce socially oriented thinking in the social entrepreneurship sector – that is, an approach in which communication is seen not as a secondary function, but as a core strategy for achieving social goals (Saebi *et al.*, 2018). Thus, communication in socially responsible entrepreneurship is not just about conveying information. It is a process of participation and joint creation of meaning, in which the communication of a business entity becomes the language of social responsibility, and the enterprise becomes a representative of value changes in society. It is this feature that determines the need for in-depth research into the communication strategies of inclusive initiatives, such as Good Bread, Lady Di Atelier, Veterans Pizza, Vbrani, as well as projects such as Walnut House.

The inclusion and socialisation of people with mental disorders is a pressing social issue. The process in which a person with special intellectual and mental needs learns to live in society, assimilating its rules, values, norms and roles in order to become a full member

of it, occupies an important place in contemporary humanitarian discourse, where the values of equality, justice and harmonious personal development are increasingly being affirmed. The problem lies not only in the physical or economic isolation of this group, but also in the fact that it is still often perceived through the prism of limitations rather than opportunities, which is largely a consequence of historical stigmatisation and the lack of an inclusive cultural narrative, with which one cannot but agree with the authors. The gradual process aimed at the harmonious development of social acceptance of inclusion as a natural phenomenon began only recently and has overcome many problems associated with the rejection of people with mental disabilities. For a long time, these people were neglected by society. It was only at the beginning of the 21st century that the public began to pay closer attention to them and look for opportunities for their adaptation and socialisation in society. The basic principle of inclusion is the adaptation of the system to human needs (and not vice versa), which corresponds to the modern understanding of inclusion presented in the works of E. Likoko & J. Kini (2017) and S. Mukherji (2021).

In Ukraine, the process of rethinking attitudes towards people with mental disorders began relatively recently and still faces a number of challenges. These include a lack of adapted educational programmes, stereotypes in the labour market, limited representation in the media, and restrictions in public life. In this context, socialisation, i.e. involving people in active participation in society, requires a comprehensive approach. Inclusion should not be just a formal principle, but part of everyday life, including education, professional opportunities, quality leisure time, the creation of a comfortable environment, productive communication, and full representation in various aspects of social life. Mental disorders cover a wide range of manifestations, from intellectual characteristics to cognitive or communicative difficulties. The biggest challenge remains the social environment, which is often unable to adapt to the perception of "otherness". In this regard, effective inclusion involves creating a supportive psychological, physiological, and communicative environment for people with such problems. Education, upbringing, and training play a significant role in the process of integrating people with special needs into society. These must be adapted

to their needs in order to ensure the most comfortable standard of living possible.

Modern approaches to inclusion in Ukraine are focused on ensuring conditions in which all people, regardless of their needs, have the opportunity to coexist and have equal access to social interaction. These approaches are based on the following principles: involvement, which involves creating conditions for a full life instead of simply "helping"; partnership, which involves the participation of people with mental disorders, injuries or disabilities in the development of social programmes, campaigns and content; ethical communication, which rejects paternalistic or pitying approaches; creating a comfortable space for adaptation and successful socialisation; normalising the image of the "other" as a natural part of social diversity, rather than an exclusion from it; representation in the media, public discourse or cultural initiatives. These principles reflect current trends in the perception of inclusion and social integration of persons with special needs in Ukraine (Lopatina *et al.*, 2023; Pylpenko *et al.*, 2024; Boldyzhar & Khokhlova, 2024).

Modern inclusion cannot be effective without proper communication support. After all, it is only through

public coverage of initiatives, popularisation of stories, demonstration of direct communication, or other types of inclusive communication directly with representatives of vulnerable groups that a real transformation of public perception becomes possible. That is why, according to the authors, strategic communication is seen as one of the key tools for overcoming barriers between the "vulnerable" and the "ordinary" and for forming a culture of equality, participation, and solidarity. Thus, the inclusion of people with mental disorders in modern conditions is not only a social or medical process, but also a profound communication practice that requires new forms of representation, interaction and joint content creation. In this case, a socially responsible business entity acts not only as a means of recognition, but also of normalisation and legitimisation of otherness, and its communication becomes the key to creating a truly open society. Inclusiveness as a strategy of socially responsible entrepreneurship is quite common in Ukraine, which indicates a trend rather than isolated cases. To illustrate this, a selection of communication initiatives by some companies, including Good Bread, Lady Di Atelier, Veterans Pizza, Vbrani, and Walnut House, is presented in Table 2.

Table 2. Visual representation of communication initiatives of socially responsible companies with an inclusive component

Company name	Logo	Credo / message
Good Bread		"We create a space where everyone feels part of the community and provide opportunities for creative self-expression in the art studio".
Lady Di Atelier		"Through fashion, we tell the world the stories of people who inspire".
Veterans Pizza		"There are thousands of pizzerias, but there is only one Veterano pizza! Through our activities, we prove that life goes on and it is worth moving forward".
Vbrani		The team's credo: "We knit products – we connect generations".
Walnut House		"Our principle of working with women is to be targeted and have a meaningful impact. Give them a fishing rod, not a fish".

Source: developed by the authors based on Good Bread (n.d.), Lady Di Atelier (n.d.), Veterano Pizza (n.d.), Vbrani (n.d.), Walnut House (n.d.)

One of the most famous social enterprises in Ukraine is the inclusive bakery Good Bread, located in Kyiv. Its

main idea is to create an emotional narrative that promotes the integration of people with disabilities and the

formation of a supportive community. The main focus of the enterprise is to provide employment for people with disabilities, particularly those with mental disabilities. The organisation's staff includes more than 70 employees with cognitive impairments. Since its inception, the bakery has produced more than 330,000 loaves of bread. The main means of communication with the public are social networks, media products, and partnership projects. The innovative concept of the bakery lies in building an active community around the brand through sincere stories about employees, which strengthens audience trust and creates emotionally rich content. This approach allows the organisation to effectively convey its main message: support for inclusivity and humanity. The slogan "Good Bread from Good People" serves not only as a marketing tool but also as a communication motivator that succinctly outlines the main aspects of the business: What? To whom? From whom? The future prospects of Good Bread's communication strategy include further expansion of its presence in the digital space, intensification of cooperation through partnership platforms, and integration with other inclusive initiatives, which will help scale their social impact (Good Bread, n.d.).

The first inclusive atelier in Ukraine, Lady Di Atelier, located in Lviv, serves as a striking example of integrating inclusion into the creative process by involving people with various types of disabilities in its work. The aim of the atelier is to promote the ideas of tolerance and inclusion among the general public, using fashion as a platform for social change. The central credo, "Fashion with meaning", emphasises the importance of creativity as an instrument of influence. The creative team of the atelier consists of 15 authors of different ages, including children and adults. Lady Di Atelier products are available in ten retail outlets across Ukraine, covering seven cities, as well as in the Czech capital, Prague. The company actively uses social media, organises exhibitions and collaborates with marketplace partners to increase its visibility and product availability. The products created are not only the result of high craftsmanship, but also a social statement, embodying the idea of creative freedom and the ability to transcend limitations. Particular attention is paid to involving authors in social projects, which shapes the brand's emotionally unique identity. The communication strategy is based on generating creative content, actively participating in thematic exhibitions, and using social platforms as a showcase for presenting the artists' work. The brand's innovative approach is manifested in the inclusion of artistic self-expression as an integral part of its organisational identity. Lady Di Atelier's main slogan, "Keep your light shining despite the darkness", has deep philosophical significance and is full of ideas about vitality, overcoming difficulties, and striving for victory. This message has a special resonance in the context of wartime, forming a strong motivational impulse. Lady Di Atelier's development prospects lie in the field of intercultural communication, international cooperation and

strengthening the role of storytelling as a means of promoting inclusiveness through art (Lady Di Atelier, n.d.).

The Veterano Pizza restaurant and pizzeria with delivery, part of the Veterano Group chain (with branches in Kyiv, Lviv, Odesa, Ternopil, Truskavets, Drohobych and Boryspil), is an example of a socially responsible business. Its goal is to create jobs for veterans and help them adapt to civilian life. The company's main mission is to build the future of human connections. The company's approach is based on brand solidarity, supported by real stories of veterans returning to peaceful life through entrepreneurship. The main message is trust and mutual assistance, which allows for the formation of a business built on shared values and identity. Interaction with the audience takes place through social media, the organisation of charity events and the expansion of the partner network, which helps to establish a deep emotional connection with the community. The company's slogan is "Our innovations provide people with new ways to connect". The main innovation is content aimed at developing collective identity. In the future, there are plans to extend this approach to other veteran initiatives and expand the information campaign to the level of national discourse (Veterano Pizza, n.d.).

The social enterprise Vbrani brings together elderly people, giving them the opportunity to create unique knitted products. Its mission is to promote the integration of older people into society by providing them with a space for creativity, development and self-fulfilment. The initiative mainly involves women from geriatric nursing homes, offering them the opportunity to feel valued. As of 2025, the project brings together 60 craftswomen from 12 regions of Ukraine, who have already created over 4,500 knitted items. Its slogan, "Love and care in every product", emphasises the warmth and social importance of this activity. Vbrani helps elderly women feel needed by involving them in the creation of beautiful things and at the same time giving them a dignified old age. Communication with the audience is carried out through social networks, local events, thematic competitions, and grant programmes. The team's credo, "Knitting products, connecting generations", embodies the idea of intergenerational unity and social integration. A unique feature of the approach is the bottom-up communication model, where the main focus is on the participants themselves – elderly women who become the faces of the brand. Further development of the project involves sharing success stories through documentary formats, collaborating with youth brands, and expanding informational influence based on narratives of social unity. This will help strengthen intergenerational ties and raise awareness of the issue of supporting older people in modern society (Vbrani, n.d.).

The social enterprise Walnut House successfully combines business activities, including a bakery, café-pâtisserie and catering, with providing social support to women in difficult life circumstances. As part of

its activities, it has established the Olga Tsipanova Centre for Integrated Care, which offers mobile medical and psychological services, as well as the “Walnut House” Foundation, which cares for women in crisis situations. The organisation’s activities also include support groups, which are implemented through projects. One such initiative is “Kryla” (Wings), which aims to help women gain confidence in their own abilities, start their own businesses and create a community for establishing partnerships, mutual promotion and implementing charitable initiatives. Walnut House actively engages the media and social networks to spread its mission of helping women in difficult circumstances. The project focuses on improving the lives of the most vulnerable groups: women who have suffered domestic violence, are raising children with disabilities, have limited employment opportunities, are internally displaced persons, veterans or partners of military personnel. The main emphasis is on targeted and practical assistance aimed at enabling women to change their lives independently and not return to crisis conditions. This philosophy is conveyed by the slogan “Give a fishing rod, not a fish”. An important part of the strategy is the use of multimedia content, such as video stories, interviews, and media campaigns, which help to engage the audience emotionally. The organisation’s innovative approach focuses on personal-

ised support that has a real social impact. Future plans include scaling up the experience through digital self-help platforms and expanding international partnerships (Walnut House, n.d.).

Overall, these examples prove that inclusive business in Ukraine is a growing trend that takes various forms, from employing veterans and people with disabilities to supporting women in crisis and the elderly. They share several characteristics: social orientation, active use of communication channels, creation of value-oriented content, and a focus on building trust and reputation capital. In the work of M. Yunus *et al.* (2010), social business is seen as a sustainable model of entrepreneurship in which economic activity is subordinated to a clearly defined social mission and the principle of reinvesting profits for the public good. The approaches proposed by the authors emphasise the importance of transparency, consistency and clarity in communicating social goals, which ensures trust, public recognition of the business and long-term interaction with stakeholders. To systematise the research results, the analysed cases were summarised in Table 3. It demonstrates the key parameters of inclusive business models – social focus, communication channels, scale of impact, creative communication strategy, innovations and prospects, which allows comparing different practices according to uniform criteria.

Table 3. Key parameters of inclusive business models

Name of socially responsible enterprise	Social focus	Communication channels	Scale of impact	Creative communication strategy	Innovations	Prospects
Good Bread	Employment of people with mental disabilities	Social media, online media, partnerships	70+ employees, 330,000+ loaves of bread, active charity work	Promoting the history of integration and support	Creating a “community around the brand”	Integration with other inclusive initiatives; expansion of digital presence
Lady Di Atelier	Inclusion of people with disabilities in the creative sector	Social media exhibitions, points of sale	15 authors, sales in Ukraine and Prague	Telling inspiring stories	Including artistic expression as part of brand identity	Cross-cultural communications, international cooperation
Veterans Pizza	Social adaptation of war veterans	Partner events, donations	No exact data available; network in major cities of Ukraine; active support for the veteran community	Promoting ideas of solidarity and mutual assistance	Creating content that shapes collective identity	Formation of a broader information campaign within the national discourse
Vbrani	Elderly people, women from geriatric nursing homes	Social media local promotions, competitions, grants	As of 2023 – 60 craftswomen in 12 regions of Ukraine, 4,500+ products	Transmitting the values of the older generation	A bottom-up communication model, where the project’s heroes are the face of the brand	Collaborations with youth brands
Walnut House	Women in crisis situations	Social media, educational programmes	Care centre, mobile services, support groups	Using multimedia content to enhance relevance, significance, and expediency	Transmitting social influence through a personalised approach	International partnership and scaling of support experience through digital self-help platforms

Source: developed by the authors based on Good Bread (n.d.), Lady Di Atelier (n.d.), Veterano Pizza (n.d.), Vbrani (n.d.), Walnut House (n.d.)

The summary data shows that inclusive business models in Ukraine are becoming a stable trend and are being implemented in various forms – from the food industry to creative industries. What the analysed companies have in common is the combination of a social mission with the active use of communication channels, which allows not only to create jobs for vulnerable groups, but also to build a positive image and trust on the part of society. Each of the cases demonstrates its own approach: Good Bread – an emotional story of integration, Lady Di Atelier – creative self-realisation of people with disabilities, Veterano Pizza – building a community based on veteran identity, Vbrani – interaction between socio-demographic and cultural-historical communities of people united by common conditions of formation and functioning in a historical period, and Walnut House – targeted assistance to women in crisis situations. Thus, inclusive business is not a isolated phenomenon, but a holistic trend that influences the development of social responsibility in entrepreneurship in Ukraine. It has been confirmed that the success of inclusive business practices depends not only on organisational or economic factors, but also on the ability of enterprises to effectively communicate their social mission. Communication acts as an “mediator” between social value and

the audience, creating conditions for public recognition and expanding influence.

The study found that the effectiveness of inclusive business practices depends not only on internal organisational or economic factors, but also on the ability of companies to effectively communicate their social mission. In the work of C.K. Prahalad & S.L. Hart (2002), the concept of “fortune at the bottom of the pyramid” argues that business can combine profitability with social value if it purposefully creates affordable products/services and involves low-income and vulnerable groups as full participants in the market. Communication acts as a kind of “bridge” between the social value being created and society, promoting its recognition and expanding its influence. Analysis has shown that communication plays a key role for several reasons: it focuses attention on the ethical aspect of the business, making its social goals more understandable and accessible; it builds reputation capital, which is crucial in a competitive environment; it performs an educational function, helping to change public opinion about people with disabilities, veterans or other vulnerable groups; it creates conditions for attracting partners and donors, ensuring the sustainability of the business model. Thus, these aspects define the main missions of communication in inclusive business, which can be summarised and presented graphically (Fig. 1).



Figure 1. Key communication missions in inclusive business

Source: developed by the authors based on their own conclusions

The results of the analysis make it possible to outline a number of strategic communication goals in inclusive entrepreneurship, including promoting the idea of equal opportunities and social justice, shaping a positive image of business as socially responsible, ensuring the active participation of vulnerable groups in public life through their representation in the media, engaging the public in supporting projects through volunteering, donations and partnerships, as well as changing stereotypes and shaping a culture of inclusiveness. In this way, communication in inclusive business is not a supporting function, but a defining one that directly influences the sustainability and effectiveness of socially responsible entrepreneurship.

The results of the analysis show that inclusive business models in Ukraine are demonstrating a trend towards growth and gradual systematic development. Despite limited resources, these initiatives are capable of creating a unique communication space in which social mission is combined with economic efficiency. The study confirms that it is communication strategies that

make the social mission visible, legitimise it in the public sphere and ensure support from society. The study analysed the communication practices of a number of inclusive business models in Ukraine. Particular attention was paid to Good Bread, a company that implements the concept of employing people with mental disabilities. An analysis of the company's official social media pages (Facebook, Instagram) for 2022-2024 revealed a systematic approach to shaping the image of a “business with a human face”. In particular, the main topics of communication are: employee stories, demonstration of social mission, slogans, credo, highlighting product features and partnership initiatives. A comparative analysis of other Ukrainian initiatives (Lady Di Atelier, Veterans Pizza, Vbrani, Walnut House) showed a variety of communication formats: from demonstrating creative works and participating in exhibitions (Lady Di Atelier) to emphasising corporate solidarity and partnership (Veterans Pizza). All of them demonstrate a common trend – the use of communication channels for informal education

of society about the importance of inclusiveness. Thus, the results of the study confirm that Ukrainian inclusive businesses not only ensure social integration but also form a new ethical norm of entrepreneurship, centred on trust, humanity and responsibility.

Discussion

The results obtained in this study regarding communication strategies for inclusive business models in Ukraine under martial law demonstrate that effective public communication through social networks and web resources contributes to building trust, engaging vulnerable groups (veterans, persons with disabilities) and social integration, although it faces challenges such as a lack of legal regulation and demographic problems. A comparative analysis with the works of other authors reveals common trends and differences, emphasising the multidisciplinary nature of the topic. In the work of N. Choi & S. Majumdar (2014), social entrepreneurship was viewed as an essentially controversial and multidimensional concept, the content of which is shaped by the social context, values and public expectations, which directly correlates with the study of the communication aspects of inclusive business models. This approach allows to interpret inclusive business as a form of socially responsible entrepreneurship, the effectiveness of which largely depends on the communication of social mission, transparency and public representation of social value, which contributes to the formation of trust, social capital and the alignment of business strategies with society's expectations.

In the study by D. Oppong-Tawiah & J. Webster (2023), corporate communication of sustainable development is viewed through the prism of greenwashing risks, particularly on social media, where declarative messages are often not backed up by real practices. In the context of analysing the communication aspects of inclusive business models, this source emphasises the critical importance of authenticity, ethics and evidence in public messages, as the gap between the declared social mission and actual actions undermines trust, reduces reputational capital and negates the potential of communication as a tool for social integration, which is particularly relevant for Ukrainian initiatives in crisis conditions. According to W.N.H. Wan Afandi *et al.* (2023), CSR communication influences stakeholder perceptions, building trust and corporate reputation through openness and consistency of messaging. This is similar to the results of this study, where an analysis of cases of Ukrainian inclusive enterprises (e.g., Veterano Pizza) showed that transparent communication about social initiatives increases audience loyalty. However, unlike W.N.H. Wan Afandi *et al.* focus on general corporate strategies, this study focuses on the military context, where communication becomes a tool for mobilising resources for vulnerable groups, adding an ethical dimension that the authors do not fully consider. Similarly, E. Borges *et al.* (2023) in a systematic review of the

literature identified sustainability communication tools, such as digital platforms and two-way dialogue, that significantly increase the effectiveness of social campaigns. Common to these findings is the conclusion about the role of interactivity in engaging stakeholders, as in the case of VBrani, where social networks contribute to the normalisation of inclusion. The difference is that E. Borges *et al.* focus on global practices, while the present study reveals the specifics of Ukraine, where war conditions require the adaptation of communication to demographic changes such as migration, which was not analysed in detail by the authors.

A.D. Baranetska (2024) considered CSR as a concept of retransmitting social values in wartime, emphasising information and communication aspects for building social trust. This directly echoes the findings of this study on ethical communication in inclusive businesses, where the rejection of paternalistic approaches (as in Lady Di Atelier) promotes social integration. The emphasis on ethical dimensions is common, but the difference is that A.D. Baranetska focuses on media discourse, while this study extends the analysis to empirical cases, identifying practical barriers such as a lack of resources for digital representation. S.M. Boldyzhar & I.V. Khokhlova (2024) positioned social entrepreneurship as an innovative tool for solving social problems in Ukraine, with an emphasis on government programmes. Common with the results presented in this study is the recognition of the role of social enterprises in creating jobs for vulnerable groups, similar to Walnut House. However, the authors focus on general economic aspects, while this study highlights the communication component, showing how authentic messages enhance the effect, which was not considered by S.M. Boldyzhar & I.V. Khokhlova in the context of war. Researchers O.V. Brazhko & A.O. Nadezhdenko (2024) analysed the socio-legal problems of social entrepreneurship development in Ukraine, highlighting trends in regulatory barriers. This differs from the results of this study, where legal aspects are considered secondary to communication strategies, but the conclusion about the need for clear representation for the sustainability of practices is common. The authors examine legal mechanisms in greater depth than this study, which focuses on communication as a bridge between the legal field and social integration. L.V. Frolova & S.O. Yermak (2021) examined the development of CSR among business structures in Ukraine between 2005 and 2020, specifying the directions of transformation. What they have in common is an emphasis on the integration of inclusive approaches into business strategies, as in the cases considered in the study. The difference is that the authors focus on historical development, while this study adds a military dimension, showing the evolution of CSR into an instrument of social stability.

V. Hurochkina & A. Braunagel (2024) studied social enterprises in the context of war against the labour market and demographics in Ukraine, emphasising their role in job creation. This is similar to the findings of this study

on inclusive businesses as a means of social integration, but the authors consider demographic aspects more broadly than the present study, which integrates communication as a key factor. In the work of A. Steiner & S. Teasdale (2019), social entrepreneurship is interpreted as a factor of social inclusion and local community development, the effectiveness of which depends on establishing trust-based communication with stakeholders and taking into account the local context, which is consistent with the findings of the study on the decisive role of strategic communications in the sustainability of inclusive business models. A. Kramarenko & A. Kvitka (2023) have developed a socially oriented inclusive business model for the strategic renewal of enterprises. What they have in common is the systematisation of economic, environmental and social aspects, as in these empirical conclusions. The difference lies in the focus on the theoretical model, while this study adds a practical analysis of communication in case studies. Overall, the comparison shows that the results of this study complement existing works by emphasising the communication dimension in a military context, while other authors focus on legal, economic or general aspects. This opens up prospects for further research on the integration of communication into inclusive models.

Conclusions

The study confirmed that inclusive business models in Ukraine not only shape new practices of socially responsible entrepreneurship, but also serve as an important communication resource for its further transformation. They combine economic efficiency with a social mission, promoting trust, community expansion, and the development of a culture of mutual support. The business models of Good Bread, Lady Di Atelier, Veterano Pizza, Vbrani, and Walnut House demonstrate that the decisive factor in their sustainability is the harmonious combination of a social mission with well-thought-out communication strategies.

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These initiatives are characterised by a clearly formulated communication mission, which is to create an inclusive public discourse through positive examples of self-realisation among people from vulnerable groups. The strategic goals of communication are to raise public awareness of the importance of inclusion, shape a positive image of social entrepreneurship, build partnership networks, attract new audiences through authentic storytelling, and strengthen interaction in the digital space. Empirical analysis revealed different approaches to achieving these goals. Good Bread focuses on communication through the personal experiences of its employees, Lady Di Atelier on demonstrating the creative potential of people with disabilities, Veterano Pizza on the idea of solidarity among veterans, Vbrani on intergenerational interaction, and Walnut House on supporting women in crisis situations. Despite the differences, what all cases have in common is an understanding of communication as a mechanism for social integration, where authenticity, openness, and emotionality determine the level of trust and effectiveness of interaction. Further research should focus on creating a system of indicators of communication effectiveness for inclusive businesses and developing modern digital formats for interaction, such as storytelling, interactive media projects, and partnerships with influencers.

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Комунікаційні аспекти інклюзивних бізнес-моделей: стратегії, інновації, перспективи

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Анотація. Актуальність досліджуваної проблеми зумовлювалася потребою осмислення комунікаційних аспектів інклюзивності як складника соціальної відповідальності бізнесу та інструменту моральнісної трансформації підприємництва в умовах воєнних і соціально-економічних викликів. Метою дослідження було концептуалізувати комунікаційні стратегії інклюзивних бізнес-моделей та проаналізувати особливості їх реалізації на прикладі українських ініціатив 2020-2024 років. У дослідженні було використано методи системного аналізу для визначення структури та функцій інклюзивних бізнес-моделей, а також узагальнення, кейс-стаді та порівняльний аналіз для виявлення інноваційних підходів до розвитку стратегічних комунікацій у сфері інклюзивного підприємництва. Результати засвідчили, що комунікаційні стратегії інклюзивного бізнесу є сучасною формою публічної репрезентації соціально відповідального підприємництва. Вони поєднують економічну доцільність із соціальною інтеграцією, сприяють формуванню партнерських взаємин між бізнесом і громадськістю, підвищують рівень довіри до компаній та зміцнюють репутацію брендів. До ефективних комунікаційних інструментів було віднесено принципи відкритості й транспарентності, створення інклюзивного дизайну продуктів і сервісів, застосування етичних медіа-практик і соціальних кампаній, орієнтованих на вразливі групи населення. Доведено, що системна комунікація підсилює соціальний капітал організацій, сприяє розширенню їхнього впливу та підвищує рівень соціальної згуртованості. Аналіз українських кейсів показав, що ефективність інклюзивних бізнес-проектів залежала від узгодженості корпоративної стратегії з очікуваннями суспільства, культурним контекстом і міжнародними стандартами сталого розвитку. Практичне значення дослідження полягало у можливості застосування його результатів для розроблення комунікаційних стратегій компаній, які прагнуть поєднати бізнес-ефективність із соціальною відповідальністю та впроваджувати інклюзивні підходи в корпоративну культуру

Ключові слова: інклюзія; комунікаційні стратегії; соціальна відповідальність; репутаційний капітал; імідж бренду



Historical aspects of representing the Slavic pagan heritage in digital archives

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Abstract. The relevance of the study is due to the need to reflect on the role of digital technologies in preserving and representing pagan heritage as a component of the cultural memory of Ukraine and Europe. The purpose of the study was to carry out a comprehensive reconstruction of the historical aspects of representing Slavic pagan heritage within the digital archival environment. The methodology combined an interdisciplinary analysis of archival, archaeological, ethnographic, and digital data, applying historical-cultural, semiotic, and information-technological approaches. The results showed that pagan heritage functions as a multi-layered system of material and symbolic objects represented in different types of sources – from chronicle texts to archaeological artefacts. Analysis of chronicle records revealed regional variability in descriptions of cult practices, which correlates with ethnographic evidence of local ritual practices. Comparing archaeological catalogues with folklore collections made it possible to trace the chronological continuity of certain ritual motifs. Digitisation proved to be a factor in increasing the accessibility of materials, but was accompanied by challenges of standardisation, contextualisation, and the authenticity of metadata. Analysis of technical solutions indicated that only comprehensive integration of standards can guarantee long-term preservation and scholarly verification of digital copies. The study determined that digital archives of pagan heritage can perform not only a preservation function but also a reconstructive-analytical role, creating new models of relationships between texts, artefacts, and symbols. The development of digital humanities has enabled the creation of multimodal databases in which ritual practices can be visualised in a spatio-temporal dimension. The conclusions emphasise that the digital representation of pagan heritage is not only a technological process but also a cultural reconstruction requiring a balance between scholarly accuracy, preservation ethics, and openness of access. The results are intended for researchers in digital humanities, archivists, museologists, cultural policy developers, and specialists in managing digital collections concerned with the preservation and representation of intangible cultural heritage

Keywords: metadata; paradata; international standards; humanities; artefacts; chronicles

Introduction

The relevance of the topic lies in the growing role of digital archives in preserving and representing cultural heritage, amid the active development of the digital humanities and the transformation of archival practices. In the twenty-first century, the digitisation of historical

materials has become not merely a technical task but also a scholarly problem encompassing issues of authenticity, interpretation, and the semantic integration of heterogeneous data. Slavic pagan heritage, as a complex phenomenon of spiritual, ritual, and material culture,

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has proved to be one of the less represented in the digital space due to the fragmentary nature of sources, the difficulty of their classification, and the multi-layered character of cultural accretions. In this context, digital archives function not only as preservation tools but as spaces for reconstructing historical memory that shape a new format for comprehending pre-Christian culture. The need for a comprehensive study of the historical aspects of representing pagan heritage in the digital environment is determined both by current processes of digitising the humanities and by the necessity of integrating Ukrainian initiatives into a broader European and global context.

In the works of Ya. Kalakura & M. Palienko (2021), electronic archival studies were viewed as an innovative field of knowledge that establishes methodological foundations for the systematisation, preservation, and interpretation of digital resources. The authors emphasised that the development of this discipline contributed to the formation of a new scholarly paradigm of archival activity oriented towards informational openness, long-term data preservation, and the creation of national digital archives. The study by J. Hutson *et al.* (2024) focused on the use of machine learning for preserving cultural heritage, in particular for documenting multilingual artefacts and cultural practices. The authors highlighted the danger of losing linguistic and cultural diversity under the influence of globalisation processes and the need to create digital infrastructures that reflect the uniqueness of local cultures. In the work of I. Munoz-Pandiella *et al.* (2024), the EHEM project (Enhancement of Heritage Experiences: The Middle Ages) revealed the complexities of digitally restoring medieval artistic heritage through 3D modelling and visualisation technologies. The authors analysed methods of reconstructing the historical appearance of monuments, approaches to conveying colour and texture, and algorithms for reconstructing cultural context. Although these results advanced digital archaeology, the problem of semantic correspondence between reconstructed artefacts and their ritual or worldview function remained unresolved. A. Cappellotto (2020) focused on the evolution of digital scholarly editions, in which facsimile copies of texts began to play a central role in the scholarly representation of historical materials. The author stressed that digital images of manuscripts provide a new level of access to the material nature of the source and shape a different logic of its perception.

In the study by D. Luchev *et al.* (2024), a semantically structured web environment for working with South Slavic manuscripts was created, opening new possibilities for palaeographic analysis and digital representation of manuscript traditions. This initiative demonstrated how digital tools can provide a new quality of access to cultural heritage. The work of N. Tomova (2021) highlighted problems in the development of Bulgaria's archival infrastructure, emphasising a lack of qualified staff

and technical resources for effective digitisation of documents. The author underlined those documents have not only an administrative but also a cultural-historical function, yet the absence of funding threatens the loss of national memory. M. Chayani *et al.* (2025) described the activities of the "3D for Digital Humanities" Consortium, which contributed to the development of three-dimensional modelling technologies in the field of cultural heritage. The researchers emphasised the importance of data interoperability, the environmental sustainability of digital processes, and the need to create national repositories. C. Ward (2023) focused on archival interaction as a material experience that affects knowledge formation in archaeology. The author argued that each excavation archive is unique and that the processes of recording, storing, and interpreting materials directly shape archaeological knowledge. This research deepened understanding of the materiality of the archive, but did not address the potential of the digital environment for reconstructing such knowledge.

Previous works have provided substantial theoretical and technological foundations for the study of digital representations of cultural heritage, but they have not covered the historical and archival-source dimension of Slavic pagan heritage. Under-researched remain issues of methodological integration of digital tools with traditional archival practices, as well as the modelling of semantic links between archaeological, ethnographic, and folklore sources. The aim of the study was a comprehensive reconstruction of the historical conditions and forms of representing Slavic pagan heritage in the digital archival space. The objectives were: to systematise historical-archival approaches to studying Slavic pagan heritage; to analyse the use of digital standards and technologies in preserving and representing cultural heritage; and to identify directions for integrating Ukrainian archival initiatives into the international context of digital humanities.

Materials and Methods

The methodological foundation was built on an interdisciplinary approach combining archival, ethnographic, archaeological, philological, and digital-humanities methods. This combination is determined by the complex nature of the object – Slavic pagan heritage – which simultaneously encompasses tangible and intangible elements, source strata from different periods, and multifaceted forms of representation in archival collections. The methodological logic of the work was defined by reconstructing the research process from identifying source corpora to constructing digital models of representation. At the first stage, sources were classified by types of preservation, origin, and structural characteristics. The comparison criteria were: the chronological range of sources, their geographical area, the level of scholarly processing, and the form of representation (manuscript, field record, artefact, digital

object). The selection of these criteria was determined by the need to reflect the representativeness and variability of the source base and to trace different trajectories of cultural information transmission. Within this approach, the historical-comparative method was used to compare different categories of sources that record pagan elements. The comparison was carried out by criteria of typological relatedness of objects (symbolism, function in ritual, manufacturing material) and by the criterion of geographical distribution. This made it possible to trace how certain cult motifs acquired local variations and in which regions they exhibited more stable reproduction.

The second methodological block was devoted to the digital aspect of the study. Digitisation was viewed not as a technical process but as a scholarly-methodological process of representing cultural heritage. The main reference points were standards for digitisation, preservation of metadata, and semantic interoperability reflected in international recommendations. The methodology of the second block was based on a critical analysis of international standards for the digital representation of cultural heritage. The analysis was conducted through a comparative study of the functionality and conceptual foundations of the standards. To assess the interoperability potential of visual data, the International Image Interoperability Framework was examined, as it provides unified access to digital images. Metadata management standards, in particular the Metadata Encoding and Transmission Standard (METS) for structuring information packages and the Metadata Object Description Schema (MODS) for bibliographic description, were analysed in terms of their effectiveness for describing complex cultural heritage objects. In the context of digital archiving, attention was paid to Preservation Metadata Implementation Strategies (PREMIS) and the Open Archival Information System (OAIS) as a conceptual basis for ensuring the long-term preservation of digital objects. To analyse methods of semantic modelling, the potential of CIDOC CRM was examined, and to assess approaches to text markup, the Text Encoding Initiative was considered.

One component of the study was the method of digital comparison of cultural-heritage archiving policies and practices. State initiatives were analysed, such as the creation of an electronic catalogue of museum treasures and the activities of the "Museum Digitization Center". Reference to these examples is explained by the fact that they demonstrate the actual state of integration of digital technologies in the field of cultural preservation and reflect the transition of Ukrainian archives to a new data infrastructure. Within the analysis of digital processes, criteria of technical compliance were also used – formats, standards, metadata structures, and preservation of provenance/paradata. This enabled a comparison of Ukrainian practices with international initiatives such as the Europeana Foundation or the Smithsonian Institution,

which serve as benchmark examples of integrating multilingual and multi-format collections. The selection of these projects is explained by their compliance with long-term archiving standards and open-science principles. A separate methodological strand involved work with regulatory acts and international documents. The provisions of UNESCO (2023) reports on supporting the digitisation of Ukrainian cultural heritage were taken into account, as well as official Ukrainian initiatives such as the War & Sanctions report (2025). Their use was determined by the need to confirm the current state of preservation and losses of cultural objects and to show the context of wartime risks within which heritage digitisation is unfolding.

Results

The historical heritage of Slavic paganism and its archival representation

The historical significance of the Slavic pagan heritage should be understood as a complex, multi-layered reality that simultaneously includes tangible and intangible elements, transitional strata between pre- and post-Christian cultures, and later folklore-ethnographic accretions. Archival preservation practices make it possible to distinguish at least four broad categories of sources: chronicle/annalistic materials; ethnographic field records and collections (records of rites, folk songs, interviews); archaeological catalogues and excavation reports; and museum catalogues and object collections (idols, amulets, ceremonial items). Combining these source types makes it possible not merely to reconstruct individual elements of belief, but to identify mechanisms of transmission and transformation of religious representations across space and time. The analysis of symbolism and ritual practice requires distinguishing between primary religious signs (theonyms, cult objects, calendrical festivals) and secondary markers – toponyms, anthroponyms, and motifs in oral tradition. For example, calendrical-agrarian practices (spring and autumn rites, determining crop cycles) are recorded in folklore sources and ethnographic records as procedural rituals (processions around fields, sacrificial offerings, ritual songs), which can be compared with archaeological evidence of altars and symbolic objects at early medieval settlements.

Applied analytics concerning the reliability and research value of different corpora must also be specific. Chronicle references to "pagan rites" are specific to particular chronographers and regions; therefore, it is useful to conduct corpus-based counts of references to particular theonyms or ritual actions in selected manuscript groupings, comparing their frequency and geographical distribution. Ethnographic collections allow statistical assessment of the persistence of certain practices: for example, on the basis of regional collections, it is possible to identify which ritual motifs were preserved as "more than local" (i.e., have wider geographical diffusion) and in which regions they were transformed

into religious folk customs. Archaeological catalogues accompanied by spatial coordinates and dating make it possible to build spatio-temporal models of the diffusion of cult practices (for example, correlating amulet finds with the concentration of particular settlement

types). Using such models makes it possible to evaluate formally claims about the “pan-Slavic” or “local” character of particular cultural elements, making conclusions more rigorously substantiated. The analysis of source types is presented in Table 1.

Table 1. Categories of sources in archival preservation

Source type	Approximate chronological range/region	Representative example/content	Possible holdings/repositories (example)
Chronicle/annalistic texts (redactions)	11 th -15 th centuries; Kyivan Rus', eastern and southern Slavic regions	Manuscript redactions of chronicle compilations; information on cult practices	National libraries, research institutions; academic editions
Ethnographic field records (interviews, songs, descriptions of rites)	19 th -20 th centuries; local regions of Ukraine (Poltava region, Halychyna, etc.)	Textual collections, audio recordings, musical transcriptions of spring rites	Regional archives, ethnographic museums; original fonds
Archaeological catalogues/excavation reports	Early Middle Ages – period of formation of Slavic communities; various regions	Excavation reports, descriptions of objects (amulets, cult complexes)	Archaeological institutes, national databases, international repositories
Museum/object collections (idols, amulets)	Material artefacts with local attributions	Ceramics with cult decoration, figurines, amulets, ritual objects	Museums, regional exhibitions, university collections; catalogues

Source: compiled by the author on the basis of S. Plokhly (2006), J.A. Álvarez-Pedrosa (2021)

Table 1 classifies sources on Slavic pagan heritage into four main types – chronicle texts, ethnographic records, archaeological catalogues, and museum/object collections – clearly indicating their chronological range, content, possible repositories, and considerations relevant to digital description. Different source types impose different requirements for metadata, context, and technical processing (for example, 11th-15th-century manuscripts require philological markup, whereas archaeological reports require georeferencing and 3D models). In Ukrainian digital archives, textual and photographic materials predominate (45% and 30% respectively), while audio, video, and interactive media account for smaller shares – highlighting that different media require specific processing. At the same time, the table also underscores the importance of preserving context and structured metadata for scholarly value.

From the nineteenth century through to the twenty-first, conceptions of Slavic paganism have undergone substantial change – both in scholarly discourse and in the cultural-ideological field. In the nineteenth century, particularly in polonised and German/Austro-Hungarian regions of Central and Eastern Europe, Slavic paganism was viewed through the lens of Romantic nationalism. This was reflected, in particular, in attempts to reconstruct “primitive beliefs” as the basis of national identity (Leerssen, 2016). For example, M. Kujawska *et al.* (2015) focused on plant symbolism and folk beliefs from areas of Western Ukraine and Poland as part of an effort towards “national revival” through the past. At the same time, researchers of that period recorded folk traditions without sufficient temporal or contextual differentiation – for instance, labelling as “pagan” practices that may already have been relics of Christianised folklore. In the twentieth century, especially after the Second World War, scholars began to evaluate the source base for Slavic paganism more critically. On the one hand, the

volume of archaeological and ethnographic research increased; on the other, methodological attention to “late” sources intensified, including the influence of Christianity on folklore and hybrid cultural forms. It was emphasised, for example, that the traditional Slavic calendrical-ritual system is far from abstractly “pagan”, but exists in continuous dialogue with the Christian conception of time and festivity (Beissinger, 2022). Moreover, the study of paganism should not be confined to archaeology or chronicles alone: folklore data, material remains, and contextual socio-cultural models must be combined. In the twenty-first century, the cultural-ideological frame has shifted again: research into paganism has received a new impetus amid growing interest in national identity, revival of traditions, and digital archival initiatives. At the same time, scholars point to the risks of popularising pseudo-pagan narratives lacking a source basis. Calendrical rites and folk beliefs have “superficially” adopted Christian structures while retaining earlier motifs – requiring careful interpretation. Thus, the transformation of conceptions of paganism involves not only changing scholarly approaches, but also changing substantive emphases – from Romantic idealisation to methodologically grounded, multidisciplinary analysis.

In the Ukrainian context, the specifics of preserving pagan artefacts and texts in national archives have several distinctive features. First, the territory of modern Ukraine historically belonged to different imperial, political, and cultural formations (Lithuania-Poland, Muscovy/Russian Empire, Austro-Hungary), meaning that archival holdings are dispersed across many institutions, with different languages of documentation and accounting standards. This produces metadata fragmentation and complicates pan-regional research. Second, in the twentieth century, warfare, Soviet policies, deportations of local populations, and destruction of cultural monuments led to losses of archival materials or to poor

preservation. For example, more than 110,000 artefacts were removed from the territory of modern Ukraine to Russian museums by 2023, complicating restitution, access, and cataloguing (Texty, 2023). In addition, a report by Ukraine's state service for cultural heritage protection recorded 1,284 cultural heritage objects stolen or removed from Ukraine as of mid-2025 (War & Sanctions, 2025). Third, Ukraine has seen active development of digital archives and digitisation initiatives, but without sufficiently unified metadata description or coordination between holdings structures. This creates a challenge: although the technological base is expanding, foundational issues of standardisation, context preservation, and ensuring long-term access remain unresolved.

Ukrainian digital archives, museums, and cultural institutions are making an active contribution to cultural heritage preservation by creating new platforms, registers, and infrastructures for access and analysis of archival materials. For example, the Ministry of Culture of Ukraine (2024) reports the creation of an electronic catalogue of museum treasures – a register divided into an internal section (for museums) and a public portal, simplifying public access. Another example is the "Museum Digitization Center", which by 2025 had digitised more than 12,000 museum objects and created more than 100,000 images, operating mobile centres in Ukraine's regions under martial law. Statistics also indicate significant growth in digital archives: between 2021 and 2023, the number of digitised documents in Ukrainian digital archives increased by 63.5% to 8.5 million units, and the number of online requests rose by 106.7% to 3.1 million annually (War & Sanctions, 2025). These facts point to several aspects. Digitisation helps preserve access under conditions of physical threat (armed conflict, archive damage, relocation of holdings). For example, according to UNESCO (2023), support for digitising museum and documentary collections in Ukraine was strengthened after 2022. Ukrainian digital archives are not only preserving materials but also beginning to create metadata structures, registers, and catalogues that enhance interoperability and scholarly usability; the Register of Museum Holdings of Ukraine is one such tool. At present, Ukraine has a number of digital archival and museum initiatives that create conditions for safeguarding cultural heritage – but they do not have a specialised focus on Slavic paganism. Representation of the pre-Christian legacy is fragmentary and unsystematised. Although the contribution is substantial, challenges remain: not all materials are yet prepared with scientifically acceptable metadata; metadata standardisation, semantic markup, and long-term preservation are still in progress. For example, a digital archive may contain high-resolution images but lack reliable provenance information or links to archaeological/ethnographic context, limiting their scholarly value. For the study of pagan heritage, this means that Ukrainian archives have significant potential, but require stronger semantic infrastructure, interoperability, and international integration.

There are also problems of reliability and interpretation in the historical sources on paganism. In essence, the pagan practices of the ancient Slavs did not leave a large body of direct written testimony: the principal sources are chronicles and annals written after Christianisation, and later folklore and ethnographic records. Chronicle sources were produced by monasteries or church institutions and often had political or ideological purposes – for example, legitimising authority or demonstrating the "transition" of pagan peoples to Christianity (Dynda, 2025). Accordingly, descriptions of pagan cults in such sources may be biased or stylised. Archaeological materials, although they appear "materially objective", also present source-related challenges: objects lacking clear stratigraphic or contextual links are sometimes misinterpreted as cultic. For example, not every ceramic figurine is necessarily religious, and the space between settlements and cult centres requires spatial analysis. Ethnographic materials collected in later periods suffer from "retroactive" transfer of motifs: an informant may present a tradition through the lens of the twentieth century, modern ideas, or reconstructions that do not correspond to the original practice.

Research on Slavic pagan heritage requires constant methodological reflection: philological, ethnographic, archaeological, and digital approaches must be combined; sources must be assessed not as authentic "snapshots" of paganism but as complex cultural products shaped by specific historical and social circumstances; and the national-historical context affecting preservation, access, and interpretation must also be taken into account.

Digital representation of pagan heritage: Technologies, challenges, and prospects

Within the humanities, the digital representation of cultural heritage is becoming a major avenue for preserving historical memory and reconstructing the past. The issue of digitising Slavic pagan heritage – a complex of tangible and intangible artefacts, mythological texts, archaeological finds, and folklore testimonies that constitute the deep foundation of pre-Christian culture – is gaining relevance. Its digital reproduction not only ensures access to sources for researchers and wider audiences, but also creates preconditions for interdisciplinary analysis using methods of digital humanities, geoinformation technologies, and semantic data modelling. Under conditions of wartime threats, the displacement of cultural valuables, and the risk of losing authentic artefacts, the digital form becomes one of the effective tools for long-term preservation and representation of national heritage. However, the digitisation of pagan cultural heritage is accompanied by a number of challenges – technical, ethical, interpretive, and methodological. Problems of metadata standardisation, the adequacy of digital copies in relation to originals, preservation of context, and the polysemy of mythological texts require a comprehensive approach combining archival studies, historical anthropology, archaeoinformatics, and digital philology. Digital archiving technologies are presented in Table 2.

Table 2. Digitisation and digital technologies for archives of pagan heritage

Component/task	Technical/methodological description (what to do)	Standards/formats/metadata (recommended)	Implementation example/project (specific data)
Selection policy for digitisation	Clear criteria of scholarly value, vulnerability, and accessibility: prioritise unique sources at high risk of loss (archaeological artefacts lacking stratigraphic context; primary ethnographic field records identifying the informant). Develop access and licensing policies for scholarly re-use	Documented institutional selection policy; rights metadata (CC licences or restrictions)	Europeana and national projects prioritise rare/vulnerable holdings; Europeana aggregates >58 million records from ~3,000-4,000 institutions (as of 2024-2025)
Technical standards for digitising images and documents (2D)	Create master copies in uncompressed or lightly compressed formats (TIFF 6.0, 16-bit for images). Set optical resolution by object type. Preserve lossless masters and produce JPEG2000/IIIF-served access versions	Formats: TIFF (master), JPEG2000 (web access); IIIF for delivery/interactive viewing; METS/MODS/ALTO/TEI for text encoding. IIIF recommended for high-quality images	Incorrect ppi/format choices hinder later scholarly work; storage constraints (large TIFFs)
Descriptive and semantic markup standards	Separate descriptive, administrative, technical, and preservation metadata. For cultural objects, use ontological description (CIDOC CRM) for semantic integration of heterogeneous sources (text ↔ artefact ↔ geography)	Dublin Core/MODS for basic records; METS for package containerisation; PREMIS for preservation metadata; CIDOC CRM for semantic links; TEI for texts (chronicles, transcripts)	Absence of CIDOC CRM prevents cross-queries between archaeology/ethnography/chronicles; weak metadata quality impedes analysis
Technologies for 3D documentation of artefacts and spatial objects	Choose method by scale: photogrammetry (structure-from-motion) for small objects; stationary/mobile laser scanning (LiDAR) for architectural/landscape complexes; integrate point clouds, textured meshes, and 3D reconstructions	Formats: LAS/LAZ (point clouds), PLY/OBJ/FBX (mesh), glTF (distribution); capture metadata (equipment, accuracy, GPS/RTK), PROV/paradata (processing steps)	3D data are heavy; require major compute/storage and comprehensive paradata to be scientifically usable
Geolocation integration and GIS context	Georeference archaeological finds and locations of ethnographic documentation: GPS/RTK coordinates, site polygons, cultural landscape layers. Link to spatial databases (GeoJSON, PostGIS) and integrate into GIS environments for spatio-temporal analysis	GeoJSON/KML for web layers; coordinate systems WGS84/local CRS; spatial metadata standards (INSPIRE for the EU)	Incorrect CRS or missing accurate coordinates prevents reliable spatial correlations
Repositories and platforms for preservation and publication	Choose between local repositories and aggregators: store master files in repositories guaranteeing long-term preservation; publish partly via aggregators (Europeana) or specialised 3D platforms (Smithsonian)	IIIF for images, OAI-PMH/APIs for metadata; replication across multiple geographic nodes; persistent IDs (DOI/ARK/Handle)	Europeana: >58 million records from ~3,000-4,000 institutions (2024-2025) as a large-scale aggregation example
Preservation and long-term stewardship (bit-preservation, migration)	Formal preservation policy: regular checksums, replication, integrity monitoring, format-migration plan. Maintain PREMIS records per digital object	PREMIS as preservation metadata; OAI-aligned repositories	Even well-digitised objects become unusable without preservation operations; migrations are costly
Paradata and provenance for scholarly reproducibility	Record digitisation procedures: device/parameters, personnel, date, software and processing parameters (calibration, filtering), file versions. Paradata are critical for evaluating model quality	PROV-O (W3C) for process description	Smithsonian and some major 3D projects document paradata for thousands of models
Interoperability and semantic integration	Build mappings between TEI/METS/MODS/CIDOC CRM; develop domain ontologies (e.g., "pagan tradition", "rite", "artefact", "theonym") for search and semantic linking	CIDOC CRM + profiles (CRMdig, CRMgeo, etc.) for spatio-semantic links; TEI for texts	Lack of semantic mappings blocks comparative analytics across collections
Operational costs and scaling (digitisation economics)	Costs depend on material type: per-page documents, per-hour audio/video, per-hour on-site 3D scanning	Use ENUMERATE methods for cost estimation; budget by material type and required quality	Poor estimates halt projects; 3D projects are capital-intensive

Note: ALTO – Analysed Layout and Text Object; LiDAR – Light Detection and Ranging; LAS – Laser File Format; LAZ – Compressed LAS; PLY – Polygon File Format; OBJ – Wavefront Object File; FBX – Filmbox; glTF – Graphics Language Transmission Format; RTK – Real-Time Kinematic; PROV-O – Provenance Ontology; KML – Keyhole Markup Language; WGS84 – World Geodetic System 1984; CRS – Coordinate Reference System; INSPIRE – Infrastructure for Spatial Information in the European Community; OAI-PMH – Open Archives Initiative Protocol for Metadata Harvesting; ARK – Archival Resource Key; ENUMERATE – European Network for Cultural Heritage

Source: compiled by the author on the basis of N. Poole (2010), S. Snyderman *et al.* (2015), Smithsonian Institution (2023), M. Storeide *et al.* (2023), V. Bachi *et al.* (2024), I. Siliutina *et al.* (2024)

The digitisation process for archival sources of pagan heritage should be treated as a project sequence in which every step (from selection to long-term preservation) materially affects subsequent possibilities for scholarly analysis. Virtually all major aggregators and specialised 3D initiatives demonstrate that without standardised metadata and paradata, corpora have limited scholarly value even if they are technically “digitised”. For example, the Smithsonian Institution (2023) documented that a library/department reached approximately 3,000 models and continues active workflow automation – an example of a centralised institutional approach to 3D with a focus on paradata and on the glTF format for open distribution. This approach illustrates how scientifically robust documentation (paradata + PROV + metadata) enables broad re-use of materials. Aggregators such as Europeana demonstrate large-scale indexing: the platform contains more than 58-59 million images/records from several thousand institutions (as of 2024-2025). This scale highlights the need for unified metadata (with 42% of content available for free re-use according to Europeana Analytics).

Critical technical decisions for preserving the scholarly value of digitised materials include the choice of image formats and compliance with international metadata standards. The TIFF file format preserves the maximum amount of primary information and is used for research and conservation purposes, whereas International Image Interoperability Framework (IIIF) delivery is optimised for open web access, balancing quality and loading speed. Standards such as CIDOC CRM and PREMIS play key roles in ensuring long-term preservation and interoperability. Without the CIDOC CRM model, it is impossible to provide semantic integration of archaeological finds, ethnographic descriptions, and chronicle sources within a single digital environment. At the same time, PREMIS is a core mechanism for formally controlling preservation actions, documenting changes, and tracking the authenticity of digital copies.

Problems of interpreting pagan texts and artefacts in digital form remain among the most complex issues in humanities informatics. Data and technologies can reduce uncertainty but cannot eliminate it entirely, because any digital reconstruction contains an interpretive component. An effective technical solution is the provision of detailed paradata – metadata about the process of creating a digital object, including information on scanning parameters, lighting, camera calibration, and software. A successful implementation of this approach is provided by Smithsonian Institution (2023) 3D projects, which publish complete paradata packages alongside 3D models, increasing the scientific reproducibility of results. In addition, each digital object should be linked to its provenance and include a “confidence” field reflecting the reliability level of the interpretation. This approach enables quantitative analysis of degrees of trust in different source types, particularly when

reconstructing pagan symbols or cult artefacts. This practice is used in international digital archives operating on the basis of PREMIS and CIDOC CRM. For archaeological materials, the recording of stratigraphic context and geocoordinates is also critical. Without these data, an artefact loses a substantial part of its scholarly meaning, since it cannot be anchored to a specific cultural tradition or historical period. The use of GIS and formats such as GeoJSON or PostGIS enables spatial modelling of the distribution of ritual practices and relationships between regions. An example of successful integration of such technologies is the CyArk initiative, which creates high-precision geospatial models of archaeological sites worldwide.

For the Ukrainian archival and research environment, the task is to develop a staged digitisation strategy. At the first stage, it is advisable to conduct an audit of archival holdings to identify vulnerable collections – nineteenth–twentieth-century ethnographic records, manuscript texts, and archaeological reports containing evidence of pre-Christian beliefs. From a technical perspective, preserving artefacts calls for 3D scanning in cooperation with international programmes such as CyArk or Open Heritage, or for establishing university laboratories of digital archaeology. Photogrammetry is effective for small objects, while laser scanning (LiDAR or terrestrial laser scanning) is suitable for large monuments. A mandatory component should be the preservation of paradata according to the PROV-O model, enabling documentation of the process of creating a digital replica. At the preservation level, a long-term preservation plan must be created: storing master copies in two geographically separated centres, verifying checksums, monitoring file integrity, and performing regular format migration. These principles are based on PREMIS recommendations and the OAIS concept, which define international standards for digital preservation. In scholarly terms, the completeness of representing pagan heritage in the digital space is determined not only by the number of digitised units, but also by the quality of their metadata, paradata, and semantic integration. Only a combination of high-quality 2D digitisation, 3D documentation, spatial data, and relevant standards makes it possible to conduct rigorous corpus-based and spatio-temporal analyses required for adequate scholarly reconstruction of pagan practices.

The interpretation of pagan texts and symbols faces a number of interdisciplinary challenges that become salient in the digital environment. First, pagan symbols and texts are polysemous: they function simultaneously as ritual, marker, mythological, and socio-cultural elements, which complicates unambiguous classification. In digital form, when texts are transformed into machine-readable format – for example through Optical Character Recognition or structured markup – there is a risk of losing nuances: apographic variants, Latinisms, insertions of Christian rhetoric, and local toponyms may

be lost or simplified. This creates a challenge because subsequent analysis may be based on “levelled” or reduced data, distorting results. Second, contextual loss in digital representations is a significant problem. When an artefact or text is digitised but metadata do not include clear data on creation time, socio-cultural conditions, physical context, or stratigraphic linkage, the researcher loses the possibility of corrective interpretation. In the context of pagan symbolism, this means that a symbol that may have had a local meaning (e.g., a ritual sign) may be presented as a “pan-Slavic symbol” even though it might have been regional, late, or blended with Christian tradition. For example, Western European classification ontologies may inadequately represent Eastern European epigraphic materials, creating “interpretive errors” when transfer into digital environments (Tamrazyan & Hovhannisyan, 2025). Third, adapting traditional analytical methods (ethnographic, textual, archaeological) to digital forms requires rethinking them. For example, the folkloristic interpretation of a rite in a field record follows an “informant–rite–record” logic, but in a digital corpus the rite may be represented only as a textual transcription without audio or video, or without indication of collective context. Additionally, digital humanities tools such as named-entity recognition or symbol visualisation face technical problems: historical documents have archaic fonts, defects, and mixed languages, which reduces automatic recognition quality. Practically, this means that when creating digital archives containing pagan-heritage materials, it is necessary to ensure extended metadata, provenance, paradata, and the ability to preserve interpretive variants. It is also necessary to encourage multimodal representations (text + image + audio/video + georeferencing) to minimise contextual loss. These measures increase the scholarly usability of digital corpora for interpreting pagan symbols and practices (Kettunen *et al.*, 2016).

Digital humanities open new horizons for studying Slavic paganism. It enables the creation of corpora of digitised texts, artefacts, and symbolic representations that make it possible to conduct large-scale statistical, frequency-based, and spatio-temporal analyses (for example, the frequency of theonyms, or the geographical spread of certain symbols). This increases interpretive objectivity compared to traditional case studies. Digital humanities also stimulate interdisciplinarity – combining archaeology, ethnography, philology, semiotics, and computer science – within a model described as “Digital Cultural Heritage meets Digital Humanities” (Münster *et al.*, 2019). Prospects include applying artificial intelligence and semantic technologies to analyse symbolic forms and artefacts; for example, computer vision models and knowledge graphs can improve the quality of cultural-heritage description (Ignatowicz *et al.*, 2025).

Given the ambiguity of Slavic paganism and symbolism, digital humanities can offer innovations such as interactive visualisations of symbols in the context of

archaeological finds, modelling the transmission of ritual practices through spatio-temporal maps, and applying topic modelling to folklore records and chronicles within digital corpora. Scientifically, this means more reliable conclusions: statistical grounding can be provided (e.g., how many artefacts bearing a given symbol were found in a specific region), and hypotheses about the spread of pagan practices can be spatially tested. Digital humanities also enable the incorporation of new sources (e.g., audio/video recordings of rites, 3D models of artefacts) and their linkage with textual information. However, digital humanities do not automatically eliminate methodological problems: critical reflection is required at the stages of modelling, metadata markup, and interpretation of results. 3D models alone do not guarantee interpretive accuracy; the decisive factor is the combined presence of context, metadata, and paradata (Pisani *et al.*, 2024).

For research on Slavic paganism, this means that digital methods should be integrated with traditional ones: philological analysis, ethnographic interviews, and archaeological context. Digital platforms should provide not merely viewing of artefacts or texts, but tools for querying, correlation, visualisation (e.g., GIS maps, 3D services), and statistical analysis. Accordingly, an integrated digital-humanities approach to Slavic pagan heritage is both promising and necessary within the humanities. Finally, successful implementation of these prospects requires three components: high-quality data (metadata, context), technical infrastructure (repositories, APIs, visualisation services), and human resources (researchers with digital competencies, interdisciplinary teams). In Ukrainian scholarship, this entails strengthening joint initiatives between archives, universities, and digital humanists to create open platforms for the study of Slavic paganism.

Discussion

The discussion of the study's results was conducted in the context of comparison with works addressing various aspects of the digital representation of cultural heritage, the legal regulation of access to it, and the transformation of archival methodology under conditions of digitisation. A common idea across all reviewed works is that digital technologies not only expand the possibilities for preserving cultural assets but also reshape the very notions of authenticity, accessibility, and interpretation of the past. In this context, the results of the study aligned conceptually with most approaches, but differed in the depth of interdisciplinary analysis and in an orientation toward semantic integration of heterogeneous sources.

In comparing the study's results with the work of I. Carbajal & M. Caswell (2021), a shared understanding emerged of the archive not only as a technical preservation system but as a dynamic space of scholarly interpretation. I. Carbajal & M. Caswell emphasised seven concepts of digital archives – materiality, context, scale, appraisal, use, connections, and sustainability – which

enable rethinking archival structures within a digital ecosystem. The results obtained confirmed these positions, since the digital representation of pagan heritage required not only preserving sources but also revealing the contexts of their use and the semantic links between different forms of data – textual, archaeological, and visual. However, unlike the more general approaches proposed by I. Carbajal & M. Caswell, the study focused on the specificity of Eastern European cultural and religious heritage, where archival space was shaped by colonial, ecclesiastical, and Soviet policies, creating a need to reconstruct lost semantics through digital models.

D. Mantoan (2025) identified three fundamental challenges of digital archival practice: the blurring of boundaries between archives and databases, the loss of the physical context of originals, and the tension between archival and data-oriented management logics. The study's results confirmed these issues: reconstructing pagan heritage digitally was accompanied by loss of authentic object context, necessitating detailed provenance and paradata records. At the same time, it appeared that for Ukrainian archives the distinction between traditional storage and dynamic databases had not only a technical but also an ideological dimension connected to the decolonisation of cultural memory. Unlike the general European examples discussed by D. Mantoan, the Ukrainian context showed greater dependence on political factors and volunteer digital initiatives compensating for the absence of a centralised archival strategy. In comparison with T. Mazali *et al.* (2021), who emphasised the importance of metadata unification, format standardisation, and interoperable platforms, the study confirmed the practical significance of these principles. It established that effective representation of pagan heritage depended on compliance with IIIF, METS, PREMIS, and CIDOC CRM standards, which enable integration of textual, archaeological, and geospatial data into a single digital system. T. Mazali *et al.* focused primarily on multimedia objects, while the study emphasised comprehensive semantic integration combining text corpora, 3D models, and spatial coordinates. Both approaches converged on the conclusion that the long-term sustainability of digital archives is possible only when technical infrastructure is combined with methodological transparency and documentation systems supporting scholarly reliability.

In G. Marsili & L. Orlandi (2020), attention focused on creating an integrated digital environment for presenting Byzantine and post-Byzantine cultural heritage through Europeana, aiming not only at preservation but also at popularisation among scholars and the public. The study's results aligned with the conclusion that archival resources must balance scholarly reliability and public accessibility, but the Byzantine Art and Archaeology Research and Technology (BYZART) project focused primarily on increasing object numbers and visual

representation, whereas the study emphasised the analytical potential of data and metadata standardisation as a basis for reconstructing historical processes. The difference lay in methodology: in BYZART, digitisation functioned as collection-building and cataloguing, while in the study it was treated as an instrument for reconstructing cultural-semantic links between heterogeneous sources – archaeological, ethnographic, and chronicle. Both highlighted interdisciplinarity and visual accessibility, but BYZART remained mainly a technical platform, whereas the study framed digital representation as a cognitive process shaping historical memory.

The results of G. Geser *et al.* (2022) pointed to a structural metadata crisis and insufficient repository integration, corresponding to the study's conclusions about the fragmentary and heterogeneous nature of archival sources for pagan heritage. Their emphasis on the FAIR principles (Findable, Accessible, Interoperable, Reusable) converged with the study's position on openness, unification, and reusability. However, G. Geser *et al.* had a more technical focus, concentrating on statistical assessment of digital infrastructures and practice prevalence, whereas the pagan-heritage analysis considered these issues in the context of historical reconstruction and semantic interpretation. Both agreed on the need for unified formats and metadata, but the study extended beyond the technological level by linking digital archiving problems to cognitive and cultural aspects of reconstructing ancient religious systems. Thus, G. Geser *et al.* supported technical conclusions but remained outside the analytical dimension of cultural transmission.

D. Novák *et al.* (2023) established that digital archiving of archaeological data in Europe remains fragmentary and dependent on state policy, fully correlating with the study's findings on fragmentation of Ukrainian archival holdings related to pagan heritage due to historical, political, and wartime factors. D. Novák *et al.* emphasised the need for political intervention, unified procedures, and a centralised approach, whereas the study considered an integrated platform as an intellectual system capable of enabling semantic interaction across data types. Both recognised that without common standards and clear coordination, digital archival heritage loses its scholarly value. D. Novák *et al.* highlighted administrative-organisational aspects, while the study focused on methodological reconstruction and interdisciplinary integration as the basis for preserving the intangible components of paganism. Comparison indicated a gradual shift from an infrastructural to a cognitive-humanistic understanding of digital archival work, reflected in the broader perspective implemented in the study.

M. Markellou (2023) showed that the digital transformation of cultural heritage depends in part on the legal-regulatory environment, which can either stimulate or restrict open access to archival materials. During the COVID-19 pandemic, digital technologies supported

cultural institutions, yet in Greece, as in many European countries, access to digitised collections remained limited due to complex licensing mechanisms and paid-permit requirements. This resonated with the study's findings, which also recorded obstacles linked to regulatory frameworks, the lack of open protocols, and uncertainty regarding copyright over digital reproductions of pagan artefacts. Unlike M. Markellou focus on legal barriers and the need for legislative reform, the study treated digitisation as a broader phenomenon encompassing technological, semantic, and humanistic dimensions. The comparison indicated that the Greek case reflects a typical European pattern: a gap between the technical potential of digital tools and conservative legal frameworks. The analysis thus confirmed that effective digital representation depends not only on technological capacity but also on legal flexibility, consistent with conclusions about the need for adaptive regulatory mechanisms for preserving pagan heritage.

G. Lechleitner (2021) interpreted digitisation not merely as a technical process of converting documents to digital form, but as a factor driving profound transformation in archival science. The shift from physical to digital archives changes principles of archival theory – authenticity, context, provenance – as well as methods of source appraisal. This view closely matched the study's approach, which likewise argued that digital copies not only preserve data but also create a new form of cultural existence in which the source acquires a multi-layered identity – material, metadata-based, and interpretive. G. Lechleitner also highlighted risks of contextual loss in digitisation, aligning with the study's identified problems of polysemy in pagan symbols and the need for enriched metadata to restore semantic connections. The difference was in subject focus: G. Lechleitner analysed institutional archival practices, while the study used an interdisciplinary base combining archaeological, ethnographic, and folklore sources within a unified digital context. Both converged on viewing digitisation as a rethinking of the nature of the archive, but the study went beyond the institutional frame, demonstrating a shift toward a new ontology of memory in digital space.

Overall comparison showed that research in digital heritage – despite differences in thematic fields, legal emphases, and technical strategies – shares a tendency to understand digitisation as a multi-level socio-cultural process. All reviewed works confirmed that effective preservation of the past requires integration of technological innovation, regulatory reform, and humanistic reflection. Against this background, the study's results extended these approaches by demonstrating that the digital representation of pagan heritage not only ensures technical data preservation but also creates a new cognitive model of historical memory in which the digital archive becomes an active space for reconstructing cultural experience.

Conclusions

The study demonstrated that the historical significance of Slavic pagan heritage is a complex, multi-layered reality encompassing tangible and intangible elements, transitional strata between pre- and post-Christian cultures, and later folklore-ethnographic accretions. Archival preservation enabled the identification of four main categories of sources: chronicle materials, ethnographic field records, archaeological catalogues, and museum collections, which together made it possible not only to reconstruct individual belief elements but also to establish mechanisms of transmission and transformation of religious representations across space and time. Symbolism and ritual practice required differentiation between primary religious signs and secondary markers, reflected in an integrated analysis of calendrical-agrarian practices recorded in folklore and ethnographic sources as procedural rituals, compared with archaeological evidence of altars and symbolic objects at early medieval settlements. Applied analysis of reliability and research value showed that each source type requires a specific approach: chronicle mentions of pagan rites are regionally specific, necessitating corpus counts of theonyms and ritual actions in selected manuscript groups; ethnographic collections enable statistical assessment of practice persistence and mapping of ritual-motif diffusion; archaeological catalogues with coordinates and dating support spatio-temporal modelling of cult-practice distribution, allowing formal evaluation of claims about pan-Slavic versus local cultural elements.

The Ukrainian context of preserving pagan artefacts is characterised by fragmentation of holdings due to historical incorporation into different imperial structures, losses caused by warfare and Soviet policies, and rapid development of digital archives that nevertheless face problems of metadata standardisation and long-term access. Digital representation of pagan heritage has emerged as a direction for preserving historical memory, but digitisation involves technical, ethical, and methodological challenges. Analysis of digitisation standards showed the critical importance of image-format choices, compliance with international metadata standards, and provision of detailed paradata for scholarly reproducibility. Interpretation of pagan texts and symbols in digital environments confronts polysemy, contextual loss, and the need to adapt traditional analytical methods, requiring extended metadata, provenance, and the capacity to preserve interpretive variants. Digital humanities open new horizons through corpora of digitised texts, artefacts, and symbolic representations enabling large-scale statistical and spatio-temporal analyses, but successful implementation depends on three components: high-quality data with adequate metadata and context, technical infrastructure (repositories and visualisation services), and human resources with digital competencies and interdisciplinary expertise. A key limitation was the fragmentary and

heterogeneous nature of archival sources, which complicates building coherent semantic models due to missing unified metadata and digitisation standards. A promising direction is the development of an integrated digital platform using artificial intelligence for semantic integration of heterogeneous sources (from archaeological artefacts to folklore texts), enabling interdisciplinary modelling of the historical dynamics of pagan practices.

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Історичні аспекти репрезентації язичницької спадщини слов'ян у цифрових архівах

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Анотація. Актуальність дослідження зумовлена необхідністю осмислення ролі цифрових технологій у збереженні та репрезентації язичницької спадщини як складової культурної пам'яті України та Європи. Метою дослідження було здійснити комплексну реконструкцію історичних аспектів репрезентації слов'янської язичницької спадщини в цифровому архівному середовищі. Методологія поєднувала міждисциплінарний аналіз архівних, археологічних, етнографічних та цифрових даних із застосуванням історико-культурного, семіотичного та інформаційно-технологічного підходів. Результати дослідження засвідчили, що язичницька спадщина функціонує як багаторівнева система матеріальних і символічних об'єктів, репрезентована в різних типах джерел – від літописних текстів до археологічних артефактів. Аналіз хронікальних записів показав регіональну варіативність описів культових дій, що співвідноситься з етнографічними даними про локальні ритуальні практики. Порівняння археологічних каталогів із фольклорними збірками дозволило простежити хронологічну тяглість окремих обрядових мотивів. Оцифрування джерел виявилось чинником забезпечення доступності матеріалів, проте супроводжувалося викликами стандартизації, контекстуалізації та автентичності метаданих. Аналіз технічних рішень засвідчив, що лише комплексна інтеграція стандартів може гарантувати довготривале збереження та наукову верифікацію цифрових копій. У ході дослідження визначено, що цифрові архіви язичницької спадщини здатні виконувати не лише функцію збереження, а й реконструктивно-аналітичну роль, створюючи нові моделі взаємозв'язків між текстами, артефактами та символами. Розвиток цифрової гуманітаристики надав можливість створення мультимодальних баз даних, де ритуальні практики можуть бути візуалізовані в просторово-часовому вимірі. У висновках наголошено, що цифрова репрезентація язичницької спадщини є не лише технологічним процесом, а й культурною реконструкцією, яка потребує балансу між науковою точністю, етикою збереження та відкритістю доступу. Результати дослідження призначені для науковців у галузі цифрової гуманітаристики, архівістів, музеєзнавців, розробників культурної політики та фахівців з управління цифровими колекціями, що займаються проблемами збереження та репрезентації нематеріальної культурної спадщини.

Ключові слова: метадані; пара-дані; міжнародні стандарти; гуманітаристика; артефакти; літописи



Evolution of digital archives as branch of archival science and document management: Comparison of practices in the USA and Latin America

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Abstract. The aim of this article was to provide a comparative evaluation of the adaptive strategies employed in the functioning of digital archives in the United States of America and leading countries in Latin America (Brazil, Mexico, Argentina). The study was based on a qualitative comparative analysis using theoretical analysis methods, case studies, and synthesis to compare the official strategies of the National Archives and Records Administration (NARA) and the Library of Congress with the strategies of the National Archives of Brazil, Mexico, and Argentina. Within the framework of this research, a systemic dichotomy in the maturity of the models in the USA and Latin America was identified. It was determined that the NARA functions as a mature Trusted Digital Repository that employs active preservation and ensures authenticity through complex, resource-intensive metadata Preservation Metadata: Implementation Strategies, and continuous preventive format migration. In contrast, it was found that archival institutions in Latin America employ a fragmented model of the Open Archival Information System, where investments are directed towards digitising historical heritage, rather than ingesting natively digital documents. Therefore, the study identified gaps in Latin America, such as infrastructure deficits (lack of ingestion systems in Brazil), personnel shortages (the dominance of an IT approach over archival science in Mexico), and financial instability, which undermine efforts to implement trusted digital repositories. As a result, authenticity in Latin America often relies on legal provisions rather than on the technical storage chain. The results of the study allowed for the formulation of a holistic approach as a recommendation for improving the long-term authenticity of electronic archives, which combines archival education reform and the creation of joint regional repositories as adaptive strategies. The practical value of the research lies in providing specific recommendations for the strategic adaptation of international standards for countries with limited resources

Keywords: resource limitations; long-term data preservation; digital transformation; ingestion; format migration; metadata

Introduction

The relevance of the research topic is determined by the transformation of the information environment, where digital documents are becoming dominant and requiring new approaches to their long-term preservation, access organisation, and authenticity assurance. In the context

of the global digital revolution, it is crucial to investigate and compare the strategies of two major cultural-geographical regions: the technologically developed United States of America (USA) and the countries of Latin America. Such a comparative analysis will not only uncover

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practices in the development and implementation of open archival systems (e.g., DSpace (n.d.), Fedora (n.d.)) and the formation of national digital heritage policies but also identify both universal and regionally specific issues related to data migration, metadata, legal aspects, and professional training.

The evolution of digital archives as a field of archival and document management research reflects significant progress in technology and methodology, influencing how records are created, stored, and accessed. This transformation is characterised by the integration of digital processes into traditional archival practices, emphasising the need for innovative approaches to managing the unique challenges posed by digital records. The research by E. Wibowo & T.A. Salim (2022) demonstrated a significant increase in the number of publications on digital archives (from 1988 to 2015), with modern trends forecasting further growth – digital archives and metadata standards highlighting the evolutionary nature of archival studies. Related findings were presented in the work of M.P. Damanik *et al.* (2024). The researchers noted the growth of digital archive management from 2001 to 2023, with increasing scholarly interest, particularly in records management, e-government, and blockchain, highlighting the sector's evolution toward using technology to optimise archival practices and enhance security. According to L. Jaillant (2022), digital archives have evolved, transforming the humanities by enhancing accessibility. Thanks to the development of open-source software and commercial software, archives that emerged in the digital world are now better preserved and managed.

The study by M.-A. Chabin (2021) outlined the dual digital transformation of archives, highlighting the availability of digitised analogue documents online and the surge in various native digital productions, significantly affecting archival processes and positioning archival research within information sciences. According to the researcher, while digitalisation changes archival practices, certain challenges arise for digital technologies. These include the fragility of media (issues with long-term preservation of digital data), decentralisation of storage, and the impact of big data and algorithms on methods of processing and utilising archival data.

An important issue in this area is the storage of electronic archival documents, their transfer to state storage, as well as the practical experience of archival institutions in the area of digital records. According to M.C. Miguel & R. da P.F. Costa (2021), technological innovations arising in the context of archives are directly related to their ability to evolve and adapt. Identifying and studying which of these new technologies can be best applied in archives could be a decisive factor in the evolution of archives. Researchers noted that the future of archives is still uncertain, but it points to certain directions, with a digital focus, universal access, though not free, inclusive, and developing faster and more dynamically than in the 20th century. Research by A.Ç. Akgün & N. Çiçek (2022)

showed that the evolution of digital archives requires rethinking traditional archival principles, such as provenance and original order, as electronic documents require new approaches to organisation and description due to their unique characteristics and vulnerabilities in information security.

The evolution of digital archives in archival and document management research reveals significant differences between practices in the USA and Latin America. Although both regions recognise the importance of digital documentation, their approaches to legislation, infrastructure, and access differ significantly. This review will examine key aspects of this practice, highlighting the legal framework, technological progress, and challenges faced in both contexts. The conclusion of the research by Y. Delgado López (2022) showed that digital documents are an integral part of a nation's documentary heritage. This emphasises their importance in the overall preservation of historical and administrative records. The legal protection position in both Mexico and Cuba, according to the research, does not provide for the physical or digital medium of support for digital documents and archives. It focuses on the content and authenticity, rather than on the specific format or method of storage. M. Afanador-Llach (2024) pointed to the uneven development of digital archives in Latin America compared to the Global North, highlighting the impact of historical colonialism on access and infrastructure, as well as the need to address power asymmetries in digitisation and cultural heritage management. The researcher noted that Latin American institutions face significant barriers in managing historical archives and developing digital infrastructures for access to cultural data, exacerbated by historical inequality, the digital divide, and geopolitics of knowledge, leading to delays in the development of digital humanities in the region compared to the Global North. The study by I. França (2023) noted that the evolution of archival science in Latin America highlights the integration of information and communication technologies and the shift to archives as instruments of government accountability and citizens' guarantees, contrasting with the American practice of digital archiving.

The literature review revealed a gap in comparative studies, which lies in the absence of a systematic comparison of the high-tech, resource-rich digital archiving practices of the USA with the regionally specific experience of Latin America. Thus, the aim of this research was to conduct a comparative analysis of the current practices of digital archives in the USA and leading countries in Latin America (using Brazil, Argentina, and Mexico as examples). The implementation of this goal involved a number of tasks: to analyse the legal and institutional models of digital archives in the USA (NARA) and Latin America; compare technological strategies for long-term preservation and ensuring the authenticity of digital archives; assess the challenges of access and inclusion to digital archival heritage in both regions.

Materials and Methods

The empirical research was based on an in-depth analysis and comparison of institutional and technological strategies for long-term digital preservation. A key factor in selecting the countries for comparative research was that they represent two systematically distinct models of digital archival science – the model of global leadership and high maturity (the United States) versus the model of resource limitations and adaptive implementation (Brazil, Mexico, Argentina). The data collection for this research was based on the analysis of legal regulations and international standards for auditing and certifying digital repositories. These included Law No. 15930 (1961), ISO 15836 (2017), ISO 16363 (2025), ISO 14721 (2025). The research was based on official strategic documents on archival data preservation and national archives, including the Digital Preservation Strategy 2022–2026 (2022), Library of Congress (LoC) (n.d.), Universidad Nacional Autónoma de México (UNAM, n.d.), International Research on Permanent Authentic Records in Electronic Systems (InterPARES, n.d.), AN digital: Digital preservation policy (Version 2) (2016), AGN International (n.d.). These materials were selected for the study as they represent the official foundation (legislative and institutional documents) of various digital archiving models. To analyse the socio-economic and cultural challenges faced by digital archival science in Latin America in the context of access to archival data, data on the digital divide (United Nations Development Programme, 2024), as well as the works of M. Arellano & J. Santillán-Aldana (2025), G.M. Gangurde (2025) were used.

During the writing of the research, qualitative methods were applied to structure the analysis. The theoretical analysis method was applied to study conceptual models, in particular, the Open Archival Information System (OAIS) (based on ISO 14721 (2025)) and Trusted Digital Repositories (TDR) (based on ISO 16363 (2025)), as well as key metadata standards such as Dublin Core (2025), Metadata Encoding & Transmission Standard (METS, n.d.), Preservation Metadata: Implementation Strategies (PREMIS, n.d.). The conceptual analysis method (comparing practical issues with the theoretical OAIS model) was used to study socio-economic and cultural challenges related to digital preservation in Latin America and compare them with the USA, to highlight the uniqueness of the challenges in Latin America (LAC – Latin America and the Caribbean). The case study method was used to analyse operational practices and their implementation in each country (USA, Brazil, Mexico, Argentina), covering the macro level (government policy). The comparative analysis method was applied to conduct an individual analysis of each case for comparison based on defined comparison criteria, covering the entire lifecycle of a digital record: the dominant preservation model (evaluation of the OAIS and TDR implementation level), preservation priority (focus on born-digital (natively digital) records versus digital surrogates (digitisation));

authenticity assurance (metadata); technological strategy; critical challenge (defining the greatest threat), education and human capital. The synthesis method was used to combine the requirements of the analysed standards into a unified set of criteria for assessing the maturity of digital archives. During this process, key aspects were considered: functional requirements (defining necessary processes, such as ingestion and preservation planning), TDR requirements, technical requirements (including the need for the preservation of the chain of custody and significant properties as mandatory conditions for long-term authenticity).

The interpretation of the results was based on a pragmatic and socio-economic approach. This approach allowed for the exploration of the problem of long-term digital preservation not only from a technical (what to preserve and how) but also from an institutional and resource perspective (why preserve, for whom, and at what cost). It also allowed for a comparison of international standards' requirements with the real possibilities and priorities of national archives (cases) to clearly adapt international digital preservation standards in different institutional and geographical contexts.

Results and Discussion

The evolution of archival science in the digital era marks a fundamental shift from the management of physical media and paper records to the long-term preservation of born-digital records and digital surrogates. This transition not only requires complex implementation of new technologies but also a radical reconsideration of traditional archival principles, particularly those relating to authenticity, integrity, and context. The digital transformation creates a new dynamic in document management, where the success of long-term access largely depends on the reliability and comprehensiveness of recorded metadata (dos Santos & Flores, 2020). International archival science (especially in the USA and the European Union) relies on two key conceptual models. The first is the OAIS (Open Archival Information System) model (ISO 14721, 2025), which defines functional requirements for any system designed for the long-term preservation of digital information. The OAIS case is not a specific archive but a conceptual framework that describes the necessary functions, information packages (SIP – Submission Information Package (n.d.); AIP – Archival Information Package (n.d.); DIP – Formats and Dissemination Information Package (n.d.), and external entities (producer, consumer, management), which must be present to ensure the long-term preservation of digital information. This model is considered a *de facto* international standard, enabling objective comparisons of architectures and processes, regardless of regional technological or financial differences (The Consultative Committee for Space Data Systems, 2024). The OAIS model introduces the concept of preservation planning, meaning that the archive does not simply store files but

also continuously monitors technologies and develops strategies (e.g., format migration or emulation) to ensure data remains readable, even if the original software and hardware no longer exist.

OAIS provides a common language for archivists, developers, and information producers worldwide. It clearly divides processes into six functional blocks (ingest, store, manage data, administer, preservation planning, access), allowing different systems to be compatible and share data. The model requires the archive to clearly define its designated community and adapt access packages (DIP) so users can understand the preserved information, rather than simply receiving a set of bits (ISO 14721, 2025). Therefore, OAIS is essential for transforming simple digital repositories into reliable, long-lasting digital archives that can serve as lifelong sources of historical, scientific, and administrative information.

The second concept is TDR, is an institutional and technical framework that requires regular audits (e.g., ISO 16363, 2025) and certifies that the repository is not only technically functional but also organisationally and financially sustainable. The TDR concept was developed to go beyond the purely technical requirements for long-term preservation (like OAIS) and ensure that the archival institution is capable of fulfilling its long-term obligations. TDR confirms that a digital repository is trustworthy. This means it not only has the correct systems and processes (complying with OAIS) but also possesses the necessary resilience, policies, and resources to operate in the future. Unlike OAIS, which is a model of "how the archive should work", TDR is a model of "how the archive should be organised and certified". The main mechanism for confirming TDR compliance is regular auditing according to international standards, notably: ISO 16363 (2025), which defines detailed metrics and requirements for audits. It evaluates three main areas: infrastructure and governance (Organisational Infrastructure) – evaluating the mission, policies, legal obligations, and financial sustainability of the repository; digital object management (Digital Object Management) – evaluating policies for acceptance, metadata creation, ensuring integrity and authenticity (technical compliance with AIP (Archival Information Package) OAIS requirements); technological infrastructure and security – evaluating security, backup, migration, and data integrity maintenance. Long-term sustainability within the context of TDR requires both financial and organisational stability. However, there is a universal challenge related to poorly defined costs for technical and organisational infrastructure. For highly developed countries like the USA, this issue concerns optimising existing systems, but for Latin American countries, these undefined but high costs can become an insurmountable barrier, calling into question the very possibility of meeting TDR standards, as this requires continuous "acid investments" (Formenton & Gracioso, 2025). Thus, TDR is an operational requirement subject to audit in

the USA, while for many institutions in Latin America, it remains an ambitious strategic goal.

The results of the current study confirmed the evolution of digital archives as a field of archival and document management research. This transformation has been driven by the need to integrate digital archives into the global information landscape. A related position was outlined in the work of P.F.C. da Silva & W.J. de Araújo (2024). According to the researchers, archiving represents a necessary evolution in managing digital records, integrating technologies such as artificial intelligence and machine learning, expanding accessibility and data processing efficiency, and highlighting the interdisciplinary nature of the field. The evolution of digital archiving, according to D.P. Udochukwu & C. Oraekwe (2021), emphasises the integration of digital collections for identifying, processing, and preserving valuable materials. The researchers pointed out the importance of preservation, accessibility issues, and practical solutions for strengthening the role of collecting and archiving institutions. A related position regarding the results of the current study was outlined in the work of J.B. Montoya-Mogollón & S. Troitiño (2020) the evolution of digital archives in archival science indicates the need for interdisciplinary approaches to solving problems of authenticity, reliability, and the preservation of digital records, integrating concepts from archival diplomacy and digital forensics for effective knowledge organisation.

A critical element of digital preservation is metadata, which provides identification, searchability, and, most importantly, confirmation of the authenticity of the digital object. In modern digital archives, these standards function as a hierarchical system. Dublin Core (2025) serves as the basic level for descriptive metadata, which is a universal standard for a minimal set of elements (usually 15), according to ISO 15836 (2017), for describing any resource. Its primary function is ensuring searchability and identification. Dublin Core is so simple and flexible that it has become the de facto base for quick cataloguing and inter-system data exchange, but it is insufficient for long-term preservation needs. Metadata Encoding & Transmission Standard (METS, n.d.) is an XML format used as a container or "wrapper" for encoding various types of metadata (descriptive, administrative, and structural) for complex digital objects. METS is supported by the Library of Congress (n.d.). Its necessity arises when working with complex objects (e.g., a digitised book consisting of hundreds of images or a website), where there is a need to aggregate various types of metadata (e.g., referencing Dublin Core for description, PREMIS for preservation); describe the structure of the object (page order, connections between sections); and ensure bulk transfer of objects between archives and repositories. PREMIS (n.d.) was developed by an international working group (with support from OCLC (Online Computer Library Center), RLG (Research Libraries Group)) and defines the essential preservation metadata

that must be independent of the specific technical implementation of the repository (e.g., in compliance with OAIS requirements). PREMIS metadata are indispensable for ensuring the viability, reproducibility, understandability, and, most importantly, the authenticity and identity of the digital object over time. They detail actions – the history of all actions performed on the object (migration, integrity check, format change); rights – information about intellectual property rights and access conditions; agents – who or what performed the actions (person, programme). PREMIS serves as a “digital journal” of the object, recording the chain of custody. Full repository systems require hundreds of PREMIS metadata elements for each stored item, making this process extremely labor-intensive and costly, but essential for confirming the authenticity of the archive.

The National Archives and Records Administration (n.d.) operates as a high-tech, centralised repository guided by a clearly defined strategy. The Digital Preservation Strategy 2022-2026 (2022) establishes the goal of identifying, preserving, and ensuring access to born-digital records and digital surrogates of the US government to protect citizens’ rights, ensure accountability, and document the national experience. The NARA digital preservation infrastructure is comprehensive. It includes tools for analysing collections, identifying and managing risks, and developing preservation action plans. A key element is the presence of necessary storage, network capacity, and systems for ingesting, processing, rendering, active file management, and system-to-system exports. The infrastructure also involves using accessible, managed, replicated content storage infrastructure (both local and cloud). NARA uses an active and resource-intensive approach to long-term preservation, which ensures the authenticity of records by confirming their reliability as an accurate representation of the original. NARA achieves this by documenting all digital preservation actions according to ISO 16363 (2025). This involves detailed metadata recording of all processes and transformations that the digital object undergoes.

One of the greatest challenges is combating technological obsolescence. NARA uses a strategy of preventive migration or format transformation. NARA’s infrastructure includes tools for forensic identification of formats and characteristics, which are used to assess obsolescence risks. Transformation is defined as the process of converting all files of a certain format or its version to a chosen, stable format. During this process, NARA strives to preserve the significant properties of the original. This active archive maintenance requires substantial ongoing investments in tools to perform format transformations. This strategy demonstrates that long-term authenticity in the high-tech environment of the USA is not a function of passive storage, but of continuous, costly, active, and technologically complex processes of migration and transformation. The success of this model depends on ensuring the adequacy of financial

flows to support these operational costs. Original files, regardless of their format, are stored in low-access storage, ensuring that the primary object remains accessible, even if its working copy is transformed (Digital Preservation Strategy..., 2022). According to J.-Y. Le Meur & N. Tarocco (2019), the field of digital archiving is in its infancy, evolving from traditional practices established for centuries for printed content. Current efforts are focused on standardised, systematic preservation methods, solving issues like format obsolescence and ensuring reliable digital repositories, as seen in CERN initiatives. According to R. Torrão Valentim & N. Bolfarini Tognoli (2020), the theoretical-methodological development of digital diplomacy, emphasising its convergence with digital forensics, reflects the evolution of digital archives in archival research, focusing on authenticity, integrity, and preservation of digital records. A.K. Higashi *et al.* (2020) discussed the complexity of digital archival records, highlighting the interdependence of preservation and storage chains and the need for reliable systems to ensure authenticity and access, emphasising the evolution towards comprehensive documentary treatment in digital archives. The results of R.S. Matoli research (2025) showed that digital preservation includes various methods and tools aimed at ensuring long-term availability, integrity, and usability of digital materials. These include data migration, emulation, and format normalisation. The researcher emphasised the importance of metadata in supporting context and usability, as well as the need for reliable backup and redundancy systems.

The Library of Congress (n.d.) case focuses on gathering, preserving, and ensuring access to the national creative and historical memory, which today is largely digital (born-digital documents, digitised collections). This makes it a key player in implementing OAIS requirements in practice. The Library of Congress plays a critical role in standardising metadata for digital archives (notably METS (n.d.)). LoC is a leading body that supports and develops this standard. METS is important for LoC because it allows complex digital objects and various types of metadata (descriptive, administrative, structural) to be aggregated into a single XML container. Alternatively, MARC (Machine-Readable Cataloging), although a traditional library standard, continues to be integrated by LoC into digital systems, adapting it for describing digital resources. LoC actively conducts research in long-term preservation, including challenges related to the variety of digital formats (format obsolescence), and is a partner in international initiatives. Its experience with millions of digital objects directly influences the formation of global best practices and often serves as a model for other national libraries and archives. Therefore, the Library of Congress is not just a user of standards but an active architect of the digital archival environment.

Digital archiving practices in Latin America are developing in the context of significant resource and infrastructure limitations. While internet access in the region

has increased significantly (thanks to universal access policies in Brazil, Chile, and other countries), the digital revolution remains incomplete. As of 2022, only 67.3% of LAC households had access to the internet, compared to 91.1% in OECD (Organisation for Economic Co-operation and Development) countries. There are significant disparities: only 46.4% of poor households in LAC had a fixed internet connection, compared to 84.6% for affluent households. Furthermore, urban households in LAC have double the access to the internet compared to rural ones (74.8% vs 35.8%) (United Nations Development Programme, 2024). This social and geographic digital divide directly affects the Access element in the OAIS model, limiting the democratic potential of digital archives. Digital preservation in Latin America faces significant socio-economic and cultural challenges that hinder effective management and accessibility of digital information. These include budget constraints (insufficient funding for digital preservation initiatives, affecting their ability to implement sustainable practices (Arellano & Santillán-Aldana, 2025)); infrastructure limitations that hinder the development of effective digital preservation strategies and lead to potential data loss (Gangurde, 2025); historical inequality (the legacy of colonialism created inequalities in access to cultural heritage, impacting the digitisation of archival materials (Arellano & Santillán-Aldana, 2025)).

Socio-economic and infrastructure limitations in LAC impact the democratic potential of digital archives, creating a systemic access challenge (Access in the OAIS model) that is unknown to the USA (United Nations Development Programme, 2024). In the USA, access infrastructure is almost universally available. However, in Latin America, even with the full digitisation of historical collections (the priority of the AGN (Archivo General de la Nación) of Argentina), the digital divide (the difference in access between urban/rural and rich/poor) limits the designated community (Designated Community) (AGN International, n.d.). This means that ensuring public access to archival heritage, which is the key social mission of archives, becomes incomplete and non-inclusive. Therefore, in LAC, the problem of digital archiving goes beyond purely digital archiving and becomes a socio-cultural problem of inclusion and inequality, where access to national memory is determined by economic status and geographical location. This forces LAC archives (unlike NARA, which focuses on technical authenticity) to balance between the technical authenticity of the future (born-digital) and the social inclusion of the past (digitisation of historical collections) (United Nations Development Programme, 2024).

Brazil demonstrates efforts to adapt international standards despite significant infrastructure barriers. The National Archives of Brazil (National Archives, n.d.) declares an institutional commitment to long-term

preservation, fully in line with the core principles of OAIS (ISO 14721 (2025)). The declaration AN digital: Digital reservation policy (Version 2) (2016) is an official commitment by the National Archives of Brazil to adopt and follow internationally recognised archival standards in the digital domain – the OAIS model, ISO 14721). The declared goal is to ensure three critical qualities of digital objects in the long term: recovery, understandability, and authenticity. This declaration signifies that the Brazilian archival institution formally recognises the need not only to preserve files but also to manage their life cycle (according to OAIS functions – ingest, store, plan, access) to ensure the authenticity of digital records in the future. This declaration is an important step as the policy (defined by OAIS management) precedes technological implementation. However, as the text reveals, the actual implementation of this commitment faces significant infrastructure and financial barriers. A. Lins & L.C.M. de Faria (2024) confirmed that the digital transformation of technologies, accelerated by the regulations of the Brazilian Ministry of Education (MEC) (2017-2022) and the COVID-19 pandemic, has radically reconfigured the management processes of academic archives, transferring them to the digital environment. This transition opens up opportunities for increased access and collaboration but also creates significant, often disproportionate, challenges for long-term preservation of documentary heritage.

Despite successes in policy adaptation and the use of open-source software, there are critical gaps that pose risks for the future: the lack of infrastructure for ingestion (the key finding is the absence of infrastructure for ingesting native-digital electronic records in national and provincial archives. This gap means that the system lacks the physical capability to properly manage state fund flows, even with quality preservation policies); financial overload – although open-source software removes the burden of licensing, it only shifts the financial burden to critically important expense categories: system integration and customisation, human resources (staff training), continuous migration to new platforms to avoid technological obsolescence; access threat (the lack of constant attention and financial resources for acidic investments (capital investment) in infrastructure and personnel threatens future functionality). The predicted outcome is a situation where access to a significant number of important state records will be impossible due to their physical or technological obsolescence.

The Mexican model of digital archival science emphasises the critical interrelationship between funding, infrastructure, and personnel qualification. The main challenge faced by archives and libraries is the dynamic, fast-paced change in hardware and software and the acute shortage of trained archival and library personnel. Professionals graduating from archival programmes

traditionally focus on digitisation and the preservation of physical media, rather than on managing the authenticity of born-digital records. This personnel shortage leads to digital record management often being conducted by IT specialists who have zero knowledge of how to professionally manage records to ensure their authenticity over the long term (Ilizaliturri *et al.*, 2023). Long-term authenticity requires PREMIS-like metadata, which record context, identity, and chain of custody (Library of Congress, n.d.). If management is carried out by IT specialists without archival knowledge, critical archival properties required for legal and historical validity may not be recorded or may be lost. This means that even if the physical file is preserved, its archival value as evidence may be irrevocably lost.

Collaboration between Universidad Nacional Autónoma de México (UNAM, n.d.) and International Research on Permanent Authentic Records in Electronic Systems (InterPARES, n.d.) is focused on developing models, policies, and strategies to ensure the long-term authenticity and preservation of electronic records created or received by individuals and non-archival organisations. The main outcome of this collaboration was the identification of a significant mismatch between the needs of digital archiving and the current educational curriculum at UNAM and other Latin American institutions. This work provided UNAM (as a leading educational institution in the region) with a methodological foundation and justification for the need to reform its curricula. The aim of the reform is to integrate subjects directly related to the nature of digital records and their unique vulnerabilities; the practical application of international standards, such as PREMIS (for capturing preservation metadata) and OAIS principles. Thus, the collaboration between UNAM and InterPARES 3 became a catalyst for the transition of Mexican archival education from a focus on physical digitisation to a focus on intellectual management of the authenticity of digital information. This is a direct response to the problem where IT professionals without archival knowledge manage critical records.

The Archivo General de la Nación (AGN International, n.d.) of Argentina is one of the major repositories in Latin America, preserving a documentary collection

that spans five centuries. AGN's mandate, defined by Law No. 15930 (1961), is traditional and focused on the collection, organisation, and preservation of documents (written, photographic, audiovisual), as well as their cataloguing and dissemination of knowledge. AGN preserves a vast collection covering a five-century period, implicitly prioritising historical heritage and physical preservation. The main conclusion of this case lies in the strategic choice of priorities in the digital transformation field: the priority (investment and effort are directed towards digitising and cataloguing existing analogue collections, i.e., creating digital surrogates). The aim is the rapid dissemination of knowledge about Argentina's history and ensuring access to historical collections, which is part of public obligations. This priority leads to a significant gap typical for the region: the lack of a complex TDR infrastructure (insufficient attention to the development of a complex TDR infrastructure necessary for long-term, reliable preservation); the issue of born-digital ingestion (AGN does not prioritise the ingestion (intake) and active long-term preservation of complex native-digital (born-digital) government records).

The AGN case clearly contrasts with the priorities of NARA (USA). Specifically, the focus is on active ingestion and long-term preservation of born-digital records using TDR principles as a priority. Additionally, retrospective digitisation and access are secondary, where TDR and born-digital management are secondary. The AGN case illustrates a regional trend in Latin America where economic and resource limitations force archives to choose between the accessibility of historical heritage (digitising analogues) and the long-term preservation of the authenticity of future born-digital records. AGN effectively fulfils its public mission regarding access to the past but faces a high risk of losing the authenticity of future records since it does not invest enough in complex TDR/OAIS-compliant infrastructure for born-digital records.

Based on qualitative analysis of the cases, it was revealed that resource limitations in Latin America are technological and personnel-related, which forces the region to adopt alternative strategies that affect the level of authenticity guarantees (Table 1).

Table 1. Comparative analysis of resource limitations between the USA and Latin America

Country/region	Most limited resources	Impact on archiving
USA (NARA/LoC)	Personnel costs for automation (OPEX) and managing massive data volumes. Limitations on the speed of migrating obsolete data.	High-tech implementation focused on proactive preservation and ensuring technical authenticity.
Latin America	Financial stability (unstable CAPEX), technological infrastructure, qualified staff to work with complex standards (e.g., full implementation of PREMIS).	Limited full technical implementation of PREMIS, reliance on open-source software and legal guarantees of authenticity.

Source: compiled by the author based on analysis from AN digital: Digital preservation policy (Version 2) (2016), Digital Preservation Strategy 2022-2026 (2022), ISO 23507:2025 (2025), Library of Congress (n.d.), UNAM (n.d.), InterPARES (n.d.), AGN International (n.d.)

Analysis of Table 1 demonstrated a dichotomy in digital archiving strategies between the resource-rich approach of the USA and the resource-limited approach in Latin America. A review of Library of Congress (n.d.), AGN International (n.d.) indicated that the lack of comprehensive technical implementation of the PREMIS standard in Latin America affects the preservation of authenticity, as PREMIS is a global standard for recording the chain of custody. The limited use of PREMIS as a dictionary, rather than as an integrated XML schema, means archives cannot automatically and fully document all changes, migrations, format transformations, and staff actions with native-digital documents. This leaves gaps in the technical proof that an object remains unchanged, thus jeopardising its authenticity as legal evidence or historical source. The analysed cases in LAC, with limited financial resources for technical guarantees (requiring ongoing OPEX funding), compensate for this with legal and institutional mechanisms (UNAM, n.d.; InterPARES, n.d.; AN digital: Digital preservation policy (Version 2), 2016). Legal authenticity (certification of authenticity according to national legislation, electronic signature by an authorised body) substitutes or supplements full technical authenticity (guaranteed by PREMIS). This approach is reactive but necessary for legitimising archival heritage.

Open platforms (e.g., DSpace (n.d.), Fedora (n.d.)) allow for meeting the basic requirements of long-term preservation and authenticity despite resource limitations: Primarily, the use of open-source software allows archives to avoid high initial costs of acquiring commercial high-tech solutions, which are a priority in the USA. Additionally, open-source software is flexible and can be customised to regional needs and standards (e.g., adaptation to Spanish/Portuguese language and national requirements for electronic signatures), even in the face of personnel shortages. While full PREMIS is unattainable, these platforms can meet basic functional requirements of the OAIS model, such as ingestion, storage, metadata management (at the Dublin Core level), and access, which are the necessary minimum for a Trusted Digital Repository. The financial burden shifts from licensing costs to staff labour (customisation and integration). This makes investments more manageable under unstable funding, giving priority to human resources over expensive commercial tools.

The USA model is based on the principle of active preservation. NARA actively manages obsolescence risks through ongoing investments in tools for preventive migration/transformation of formats. This is an active

archive maintenance strategy where authenticity is guaranteed through detailed documentation of every migration step according to ISO 16363 (ISO 23507:2025, 2025). In contrast, the LAC model, due to a lack of funding and infrastructure, often resorts to passive/reactive preservation. The lack of ingestion infrastructure (as in Brazil) and the inability to fund ongoing active migration create a systematic threat to long-term access and authenticity. As a result, authenticity may be lost not due to malicious intent but due to technological negligence caused by financial and personnel limitations.

In the USA, the emphasis on automation of metadata and the need to manage complex cloud/local infrastructures (meeting TDR requirements) requires a high level of technical and archival expertise within the professional community (Digital Preservation Strategy..., 2022). In Latin America, particularly in Mexico, there is an acute shortage of specialists trained in managing long-term authenticity of born-digital records. The issue is that IT competencies often prevail over modern archival knowledge (Formenton & Gracioso, 2025). This leads to management being carried out by IT professionals who lack the archival knowledge necessary for ensuring authenticity in a professional manner. This personnel gap is a direct threat to authenticity, as only archivists trained in managing context and preservation metadata (PREMIS) can guarantee the preservation of significant properties of digital objects during technological transformations.

The financial stability of institutions demonstrates the most significant gap in the maturity of digital archives, reflecting fundamental differences in investment models. The National Archives and Records Administration (n.d.), with stable government funding, focuses on operational costs (e.g., data integrity programmes and regular technological transformations), which are necessary for proactive risk management. In contrast, Latin American archives face the constant need for capital investments aimed at building basic organisational and technological infrastructures for ingestion and long-term preservation (Formenton & Gracioso, 2025). As a result, unstable or temporary funding in LAC complicates long-term planning, which is critical for implementing continuous processes inherent in the TDR model. Based on qualitative analysis and conceptual differences in financial stability and investment priorities (proactive vs reactive preservation, operational vs capital expenses), Table 2 provides a comparative analysis of funding, illustrating systemic differences in financial investment models and their consequences.

Table 2. Comparative analysis of digital archiving funding between the USA and Latin America

Comparison element	USA (NARA)	Latin America
1. Funding source and stability	Stable, sufficient government funding. Ensures financial sustainability needed for TDR.	Unstable, temporary funding. Complicates long-term planning, disrupting TDR requirements.
2. Main focus of investment	Operational costs (OPEX): continuous funding for active preservation (format migration, tool updates, managing large volumes of PREMIS metadata).	Capital investments (CAPEX): need to finance the building of basic infrastructure (ingestion, storage) and address staff shortages.

Continued Table 2.

Comparison element	USA (NARA)	Latin America
3. Risk management strategy	Proactive management: funding directed towards preventive migration of formats and documenting processes (ISO 16363) to ensure authenticity.	Reactive/passive preservation: lack of funds for active migration; risk of data and authenticity loss due to technological obsolescence and lack of ingestion.
4. Software costs	Costs for commercial, high-tech, and specialised tools integrated into complex infrastructures.	Minimising initial costs through Open Source Software (DSpace, Fedora). Financial burden shifted to customisation, integration, and human resources.
5. Authenticity impact	Guaranteed technical authenticity: funding supports full implementation of PREMIS, documenting the chain of custody.	Legal authenticity: legal guarantees replace or supplement technical authenticity; lack of funds for full, technically necessary implementation of PREMIS, jeopardising authenticity as evidence.

Source: compiled by the author based on analysis from AN digital: Digital preservation policy (Version 2) (2016), Digital Preservation Strategy 2022-2026 (2022), ISO 23507:2025 (2025), Library of Congress (n.d.), UNAM (n.d.), InterPARES (n.d.), AGN International (n.d.)

From Table 2, it is clear that the comparative analysis of funding reveals a systemic dichotomy between the USA (NARA) and Latin America, directly impacting the resilience of archival systems and the assurance of authenticity. The USA, with stable government funding, focuses its investments on operational costs (OPEX), allowing for proactive risk management (preventive format migration) and guaranteeing technical authenticity through the full implementation of PREMIS metadata and advanced commercial technologies. In contrast, Latin America faces funding instability, focusing on capital investments (CAPEX) to build basic infrastructure and using reactive/passive preservation. This leads to replacing technical authenticity with legal authenticity, creating a high risk of data loss and violating the requirements of Trusted Digital Repositories. The use of Open Source Software (DSpace, Fedora) in LAC, while minimising

initial costs, shifts the financial burden to customisation and human resources, emphasising the fundamental financial barrier in the region.

The systematic difference in the maturity of digital archives between the United States and Latin American countries stems from differences in strategic priorities: while federal archival institutions in the USA (NARA) operate as TDR, implementing proactive risk management and systematic format migration (managing a large “fleet”), most LAC archives remain at the stage of building basic ingestion infrastructure and addressing the critical shortage of qualified archival personnel, creating an institutional barrier to ensuring long-term authenticity of digital records (building a basic “secure boat”). To synthesise the identified differences and their consequences, Table 3 provides a comparative analysis of the key elements.

Table 3. Comparative analysis of key elements of digital archival science: USA vs Latin America (Brazil, Mexico, Argentina)

Comparison Element	USA (National Archives and Records Administration)	Latin America (Brazil, Mexico, Argentina)
1. Dominant preservation model	Comprehensive TDR/OAIS model. Priority given to reliable digital repositories (TDR), requiring both technical compliance with OAIS (ISO 14721) and passing the ISO 16363 audit for confirming financial and institutional sustainability.	Fragmented OAIS Model. OAIS is used as a declarative goal and basis for policy, but its full implementation is limited. Focus is shifted to the Access function (DIP).
2. Preservation priority	Born-Digital (Natively digital records). Focus is on active ingestion and long-term management of born-digital government records. Retrospective digitisation is secondary.	Digital Surrogates (digitisation). Priority is given to digitising vast historical heritage to ensure public access (as in the case of AGN). Born-digital ingestion is often ignored or delayed.
3. Authenticity assurance (metadata)	PREMIS as a mandatory standard. Authenticity is guaranteed through complex, continuous preservation metadata (PREMIS) that records the full chain of digital preservation (chain of custody).	Legal Authenticity. Authenticity is often guaranteed by national legislation (e.g., Brazil/Mexico), which legally equates digital documents to originals. Technical recording of PREMIS-like metadata is inconsistent or absent.
4. Technological strategy	Use of advanced, often commercial, solutions, cloud technologies, and regular migration strategies for actively preventing technological obsolescence.	Open Source Software. Widespread use of DSpace, Fedora, and other open platforms to minimise initial licensing costs. Financial burden shifted to customisation and human resources.
5. Critical challenge	Scale and cost of PREMIS. Challenge in maintaining billions of objects and vast amounts of complex metadata.	Personnel shortage and financial instability. Lack of qualified personnel (as in Mexico) who understand PREMIS/OAIS, and unstable funding (non-compliance with TDR), threatening long-term viability.

Continued Table 3.

Comparison Element	USA (National Archives and Records Administration)	Latin America (Brazil, Mexico, Argentina)
6. Education and human capital	High integration of digital archival science in university curricula. Collaboration with IT professionals under the guidance of archivists.	Outdated curricula. Focus on traditional media. Critical need for reform (as shown by efforts at UNAM / InterPARES 3), as functions are often performed by IT staff without archival knowledge, leading to loss of archival properties.

Source: compiled by the author based on analysis from AN digital: Digital preservation policy (Version 2) (2016), Digital Preservation Strategy 2022-2026 (2022), ISO 23507:2025 (2025), Library of Congress (n.d.), UNAM (n.d.), InterPARES (n.d.), AGN International (n.d.)

The presented comparative Table 3 clearly illustrates the systemic dichotomy in digital archiving approaches between the USA and Latin America (Brazil, Mexico, Argentina), reflecting a fundamental difference between the resource-secure, technology-oriented model and the adaptive, resource-limited model. The United States (NARA) operates as a mature Trusted Digital Repository (ISO 16363, 2025), prioritising the active preservation of born-digital records and guaranteeing authenticity through the mandatory, complex use of PREMIS metadata and advanced commercial technologies. In contrast, Latin American countries use a fragmented OAIS model, where investments are directed towards digitising historical heritage (access) rather than ingesting future digital documents. This results in replacing technical authenticity guarantees with legal (legislative) authenticity, using open-source software as a financial compromise and, most critically, facing a significant personnel shortage and financial instability (non-compliance with TDR), creating a systemic risk to authenticity and long-term viability of their digital heritage.

Based on the results of the current study, there is a trend towards sustainable digital preservation, supported by the development of complex systems such as PREMIS (n.d.) and others, to ensure the integrity, availability, and durability of electronic records in regional regulatory contexts. According to J. Barriendos (2022) research, the ICAA (International Council of Archives) document project is an important digital initiative for Latin American art, demonstrating the intersection of museological practices, digital humanities, and the structured categorisation of cultural heritage using tools such as the Getty Foundation Thesaurus, thereby influencing global research in this field. According to N.J. Pulido Daza *et al.* (2024), sustainable digital preservation has become an essential component of long-term electronic record management, thanks to rapid technological advancements and growing dependence on digital formats. This paper presents a proposal for sustainable digital preservation (PPREDIS) – a comprehensive system developed to ensure the integrity, availability, and durability of electronic records in the Colombian regulatory context.

To overcome systemic barriers and ensure the long-term authenticity of electronic records in Latin America,

a holistic approach is needed that combines technological resilience with addressing issues of digital literacy and staff training, as the implementation of OAIS/TDR is not only a technical but also a complex socio-economic problem. The priority should be the development of human capital and education. The issue identified in the UNAM/InterPARES 3 collaboration in Mexico calls for a reform of educational curricula for archivists, focusing on the principles of authenticity, integrity, and the management of born-digital documents. This is necessary to overcome the dominance of the pure IT approach that ignores critically important archival properties of records (United Nations Development Programme, 2024).

Furthermore, considering the constant need for financial investment, it is not advisable for individual LAC countries to attempt to build their own fully functional TDR. Instead, regional infrastructure solutions should be explored, involving the creation of regional cloud or federated repository models. Such collaboration would allow costs to be distributed and ensure the necessary replicated storage. Regarding technical implementation, a strategic adaptation of standards is needed. Instead of attempting to implement full, resource-intensive schemes, LAC should focus on implementing a minimum viable core of PREMIS-like metadata. This core should include only those elements that are absolutely necessary to prove authenticity and integrity and could be integrated into existing open-source systems (e.g., DSpace) (Formenton & Gracioso, 2025).

International Aid and Partnerships (e.g., from the International Database (IDB) or World Bank), according to I. França (2023), require targeted international funding. The funds should be directed towards eliminating the most critical infrastructure gaps, particularly in creating electronic record ingestion systems (E-Records Ingest Systems), the absence of which in national archives (as found in Brazil) creates a systemic risk of irreversible loss of state funds. A similar position regarding the findings of this research was expressed by M.Á. Márdero Arellano & J. Santillán-Aldana (2025). The researchers emphasised the importance of digital preservation and sustainability in Latin America, and while examining the challenges and strategies characteristic of the region, they pointed to collaboration and future prospects for

improving digital communication in Latin American academic contexts. The same position was echoed in the work of K.D. Yadav (2025): issues of digital aging, data degradation, and long-term accessibility require strategies to ensure digital continuity. According to the researcher, an important aspect is a proactive, politically-oriented, and technologically updated approach to sustainable digital preservation. In this context, the findings of this research correlate with the work of N.B. Rabelo & C. Schmidt (2022): contemporary digital archiving projects, developing theoretical and methodological frameworks related to technological transformations, underscore the necessity of reflecting on new technologies in decentralised archival practices since their research trajectory in 1999.

Thus, according to the results of the study, the National Archives and Records Administration model demonstrates highly effective methods of active preservation and format risk management. International cooperation should focus on adapting these high-tech methods to the resource realities of LAC. This could involve creating regional centres of excellence that would standardise format transformation processes and develop recommendations for choosing sustainable formats, thereby minimising the need for costly internal tool development in each individual country.

■ Conclusions

The results of the empirical research confirmed that international archival science is based on the systemic dichotomy of two key conceptual models: OAIS (ISO 14721), which defines the necessary functional blocks (ingest, preservation, access) and information packages (SIP, AIP, DIP), and TDR (ISO 16363), which verifies the organisational, financial, and technological sustainability of the repository. The application of theoretical analysis and synthesis of standards allowed for the creation of a unified set of criteria, according to which the authenticity of a digital object critically depends on preservation metadata (PREMIS) that records the chain of custody. It was determined that in the USA, NARA applies an active preservation strategy, which requires continuous investments in tools for preventive format migration, ensuring authenticity by documenting each step in detail according to ISO 16363. NARA's success also depends on the innovative efforts of the LoC and NARA in automating metadata creation to overcome the high labor intensity of the process. This confirmed that, for a high-tech model, long-term authenticity is a function of not passive storage but costly, active, continuous technological processes.

Based on the analysis of legislative documents and cases, a systemic difference in maturity levels between the USA and LAC was investigated, rooted in socio-economic factors. It was found that Latin American archival institutions use a fragmented OAIS model, where investments

are directed towards digitising historical heritage (access), rather than ingesting future digital documents. This has led to three critical gaps, which pose a systemic risk to authenticity: infrastructure deficit (the Brazil case), personnel deficit and authenticity loss (the Mexico case), and strategic compromise (the Argentina case). Despite the official AN digital: Digital preservation policy (which declares compliance with OAIS), the study found a critical lack of infrastructure for ingesting born-digital records in national archives. It was also found that the UNAM/InterPARES 3 collaboration revealed a sharp shortage of qualified archival personnel. As a result, the management of digital records is often delegated to IT professionals without archival knowledge, leading to the ignoring or loss of PREMIS-like metadata. This became a direct threat to authenticity, as the archival value of documents, regardless of their physical preservation, is lost without documenting context and the chain of custody. Furthermore, the analysis of the Archivo General de la Nación illustrated a strategic compromise, prioritising the digitisation of analogue collections (access function DIP), which resulted from postponing investments in the complex TDR infrastructure necessary for long-term preservation of born-digital records. Overall, it was determined that LAC demonstrates that the lack of financial stability and personnel potential are more significant barriers to implementing TDR/OAIS than the technology itself. Within this study, it was established that overcoming systemic barriers in LAC requires a holistic approach that combines technological resilience with addressing personnel training issues (curriculum reform, cost-sharing for preservation, ensuring replicated storage, enhancing international cooperation, etc.).

The limitation of the study was that it involved secondary sources (official strategies and scientific publications) rather than conducting primary field audits. This did not allow for the assessment of the actual state of compliance with international standards in real-time or quantitatively measure the effectiveness of these processes at NARA compared to LAC. Future research should be directed towards a quantitative risk assessment in LAC through the development of regionally adapted TDR metrics (based on ISO 16363) and empirical analysis of the effectiveness of the minimal core of PREMIS-like metadata, integrated into open-source software (DSpace, Fedora), to confirm their sufficiency for legal authenticity.

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Еволюція цифрових архівів як напрям архівознавства та документознавства: порівняння практик США та Латинської Америки

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Анотація. Метою цієї статті було здійснення порівняльної оцінки адаптивних стратегій, що застосовувалися у функціонуванні цифрових архівів у Сполучених Штатах Америки та провідних країнах Латинської Америки (Бразилія, Мексика, Аргентина). Дослідження ґрунтувалося на якісному порівняльному аналізі з використанням методів теоретичного аналізу, кейс-стаді та синтезу для зіставлення офіційних стратегій Національного управління архівів і документації США (NARA) та Бібліотеки Конгресу зі стратегіями національних архівів Бразилії, Мексики й Аргентини. У межах цього дослідження було виявлено системну дихотомію зрілості моделей у США та Латинській Америці. Було встановлено, що NARA функціонувало як зріле надійне цифрове сховище (Trusted Digital Repository), яке застосовувало активне збереження та забезпечувало автентичність за допомогою складних, ресурсомістких метаданих типу Preservation Metadata: Implementation Strategies і безперервної превентивної міграції форматів. Натомість було виявлено, що архівні установи в Латинській Америці використовують фрагментовану модель відкритої архівної інформаційної системи, де інвестиції спрямовуються на оцифрування історичної спадщини, а не на введення цифрових документів у вихідному форматі. Тому в ході дослідження були виявлені прогалини в Латинській Америці, такі як дефіцит інфраструктури (відсутність систем введення даних у Бразилії), нестача персоналу (переважання ІТ-підходу над архівною наукою в Мексиці) та фінансова нестабільність, які підривають зусилля з впровадження надійних цифрових сховищ. У результаті автентичність у Латинській Америці часто ґрунтувалася на правових положеннях, а не на технічному ланцюгу зберігання. Результати дослідження дали змогу сформулювати цілісний підхід як рекомендацію для підвищення довгострокової автентичності електронних архівів, що поєднував реформу архівної освіти та створення спільних регіональних репозитаріїв як адаптивні стратегії. Практична цінність дослідження полягала у наданні конкретних рекомендацій щодо стратегічної адаптації міжнародних стандартів для країн з обмеженими ресурсами.

Ключові слова: обмеженість ресурсів; довгострокове збереження даних; цифрова трансформація; введення; міграція форматів; метадані



Media studies in Germany and modern approaches to analysing communication in the digital environment

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Abstract. This study aimed to examine the theoretical foundations, institutional architecture, and empirical evidence characterising contemporary German communication studies in their response to digital transformation. The research employed a comprehensive analytical framework combining theoretical synthesis, comparative institutional analysis, and systematic analysis of empirical findings from major German media research centres and recent national surveys. The investigation revealed that German communication studies had undergone profound structural transformation since the mid-1990s, shifting from traditional mass communication focus toward analysing hybrid-media communication systems. The networked institutional architecture, exemplified by the Centre for Media, Communication and Information Research at the University of Bremen, the Leibniz Institute for Media Research in Hamburg, and the Department of Media and Communication at Ludwig Maximilian University Munich, demonstrated strategic interdisciplinary integration addressing algorithmic systems, datafication, and social inequalities. Analysis of the Digital News Report 2025 for Germany revealed that while linear television remains the dominant news source for the general population, internet sources are rapidly approaching comparable levels of importance, and social media platforms have become primary news channels for youth audiences. Trust in news in Germany remains moderately high, with 45% of the adult online population believing most news is generally trustworthy, while public service news and local newspapers enjoy the highest levels of trust. However, the use of AI in journalism is met with significant resistance, as 54% of respondents feel uncomfortable with news produced primarily by AI, reflecting strong preference for human editorial agency. The study identified critical methodological challenges, including the necessity of adapting traditional content analysis to computational methods and establishing new ethical criteria for datafication research, alongside a significant professional skills gap among young journalists in essential digital competencies. These findings provide intellectual foundation for normative digital policy development, positioning German scholarship as a key contributor to value-oriented approaches in global digital governance, particularly emphasising democratic resilience and social consequences over purely technological innovation in addressing digital transformation

Keywords: datafication; journalism; mediatisation; algorithms; artificial intelligence

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Introduction

The digital transformation of contemporary media environments has fundamentally altered the landscape of communication research, compelling academic disciplines worldwide to reconceptualise their theoretical frameworks, methodological approaches, and institutional structures. This transformation is particularly pronounced in journalism and public communication, where datafication, algorithmic mediation, and artificial intelligence have emerged as dominant forces reshaping how information is produced, distributed, and consumed. B.L. Ott & R.L. Mack (2025) emphasised that the digital age demands new analytical frameworks for understanding media systems, as traditional distinctions between mass and interpersonal communication dissolve in hybrid digital ecologies. The authors argue that contemporary media studies must address the convergence of technological, social, and cultural dimensions of communication, recognising that digital platforms fundamentally alter power relations and information flows within society.

German Communication Studies, or Kommunikationswissenschaft, represents a particularly significant case for analysing disciplinary adaptation to digital challenges due to its unique theoretical heritage and institutional infrastructure. E. Humprecht *et al.* (2022) provided empirical evidence demonstrating substantial cross-national variation in how media systems have evolved in the digital age across thirty countries. Their comparative analysis reveals that institutional factors, regulatory traditions, and journalistic cultures produce markedly different digital media ecosystems, with Germany exhibiting distinctive patterns characterised by strong public service broadcasting, high news quality standards, and relatively robust institutional trust. A.L. St  phanie *et al.* (2023) further illuminated the distinctive character of German media scholarship by examining the connections between German and French communication research traditions. Their work revealed that German Kommunikationswissenschaft has developed relatively independently from Anglo-American communication studies, maintaining stronger ties to sociology and critical theory while emphasising normative questions about media's role in democratic society.

The theoretical foundations of German media research are deeply rooted in the Frankfurt School's Critical Theory tradition, which provides normative frameworks for assessing power relations and social inequalities in mediated communication. C. Fuchs (2022) offered a comprehensive examination of digital ethics grounded in critical theory perspectives, arguing that datafication and algorithmic systems must be analysed not merely as technical innovations but as manifestations of capitalist power structures that reshape social relations and democratic participation. C. Fuchs demonstrated how critical approaches reveal the exploitative dimensions of platform capitalism, surveillance infrastructures, and data

commodification, providing essential analytical tools for understanding the political economy of digital media. However, this critical tradition exists in productive tension with empirical, data-driven research approaches that characterise much contemporary communication scholarship, creating methodological debates about how best to study digital phenomena.

The methodological challenges posed by digital environments have necessitated substantial adaptations in research practices across communication studies. A. Gnach *et al.* (2022) explored how digital communication requires new analytical approaches within media linguistics, demonstrating that computational methods and big data analytics must be integrated with traditional qualitative and interpretive frameworks to capture the complexity of digital discourse. D. Riffe *et al.* (2023) provided updated guidance on quantitative content analysis in digital contexts, addressing how automated text analysis, machine learning, and computational approaches can be reconciled with established quality criteria of validity and reliability. These authors recognise that digital data environments present both unprecedented opportunities for large-scale analysis and significant epistemological challenges regarding measurement, sampling, and inference.

Political communication in hybrid media systems represents another crucial domain where digital transformation demands new analytical frameworks. A. Sch  fer (2023) investigated how political parties develop strategic communication approaches for hybrid media environments where traditional broadcasting, digital platforms, and interpersonal networks intersect. The research revealed that digital heuristics shape political communication strategies in ways that privilege certain forms of content while marginalising others. L. Schwaiger *et al.* (2022) examined conspiracy mindsets in digital environments, revealing how algorithmic recommendation systems and platform architectures can facilitate the formation and reinforcement of conspiratorial worldviews. B. Kovarik (2025) provided historical perspective on media revolutions, tracing continuities and ruptures from Gutenberg to the digital age and demonstrating that each major media transformation generates anxieties about social fragmentation and threats to established knowledge institutions.

Despite substantial scholarly attention to digital media transformation globally, systematic analysis of how specific national research traditions-particularly the German Kommunikationswissenschaft-have restructured their theoretical frameworks, institutional architectures, and methodological practices to address datafication, algorithmic mediation, and artificial intelligence remains underdeveloped. Existing literature tends to focus either on broad international comparisons that obscure national specificities or on narrow technical innovations without examining broader

disciplinary transformations. The gap between critical normative scholarship emphasising power relations and empirical research focused on audience behaviour creates particular analytical challenges in understanding how German media studies navigates digital disruption while maintaining its distinctive intellectual identity. Therefore, this study aimed to examine how German Communication Studies adapted its theoretical, institutional, and methodological approaches to digital media transformation. The objectives of the study were to explore the theoretical foundations and institutional structures distinguishing German media research in the digital age, to analyse empirical patterns of digital news consumption and public attitudes toward artificial intelligence in journalism, and to identify key methodological and professional challenges facing the discipline.

Materials and Methods

This research was conducted as a comprehensive theoretical and institutional analysis of contemporary German communication studies (Kommunikationswissenschaft) and their approaches to analysing digital media environments. The study employed an integrative analytical framework combining theoretical synthesis, institutional mapping, and systematic analysis of empirical research findings. The empirical foundation consisted of three primary categories of sources. The first category comprised academic publications by leading German communication scholars. This included foundational texts on communicative figurations and mediatisation research (Hepp *et al.*, 2018). Studies examining datafication processes in contemporary journalism were also analysed (Loosen, 2018). Critical examinations of theoretical deficits in German communication research provided important context (Tröger & van den Ecker, 2023). The second category included institutional documents and research priorities from major German media research centres: the Centre for Media, Communication and Information Research (ZeMKI) at Bremen (ZeMKI, n.d.a) and the Department of Media and Communication (n.d.) at Ludwig Maximilian University Munich.

The third category encompassed empirical research reports. The Reuters Institute Digital News Report 2025 for Germany provided authoritative national data (Behre *et al.*, 2025). The Technology Assessment Board report on algorithms in digital media offered policy-relevant analysis (Oertel *et al.*, 2022). Studies on computational methods in communication research contributed methodological insights (Haim *et al.*, 2023). Systematic reviews of digital journalism research traced disciplinary evolution (Quandt, 2023). Additional sources included research on user trust in AI-generated political content (Reiss *et al.*, 2025). Conceptual frameworks for news experiences on social media provided theoretical grounding (Kümpel, 2022). Studies on AI applications for detecting disinformation campaigns demonstrated practical applications (Unger *et al.*, 2025).

The methodological approach centred on comparative institutional analysis to identify structural characteristics and research priorities across the German media studies landscape. Theoretical framework analysis traced the intellectual foundations shaping German approaches to digital communication, particularly the evolution from traditional Publizistikwissenschaft to contemporary macro-theoretical frameworks. A synthesis approach integrated findings from diverse empirical studies, enabling identification of convergent trends in digital news consumption, audience behaviour, and professional transformations in journalism. This included systematic examination of quantitative data on news source preferences, social media platform usage patterns, public perceptions of disinformation threats, and attitudes toward AI in journalism. The study examined datafication through multiple lenses: data-based journalism, algorithmed journalism, automated journalism, and metrics-driven journalism. Particular attention was paid to methodological innovations, including adaptations of traditional content analysis to computational methods and the establishment of ethical governance frameworks. Comparative analysis of institutional priorities and research outputs enabled identification of key methodological and professional challenges through triangulation of academic publications, institutional reports, and empirical survey data.

The temporal scope focused on developments from the mid-1990s, when digital transformation began reshaping communication studies, through early 2025. Source selection prioritised peer-reviewed publications, institutional documents, and authoritative research reports representing mainstream German scholarship while acknowledging critical debates. The analytical framework was structured around four thematic domains: theoretical and institutional foundations, datafication processes and empirical evidence, methodological challenges and professional skill gaps, and future trajectories for digital communication research. This structure enabled systematic examination of how German media studies operates across multiple levels, from macro-theoretical frameworks to practical methodological adaptations and policy implications.

Results and Discussion

Theoretical and institutional foundations of digital media research in Germany

German Communication Studies (Kommunikationswissenschaft, KMW) has undergone a profound structural transformation since the mid-1990s, directly driven by radical media-technical innovations such as computerisation, digitalisation, and multimediatisation. The discipline, historically rooted in traditional Publizistikwissenschaft, which focused on mass communication, was forced to undergo a fundamental reorientation, as discussed in works dedicated to the history of the discipline. This process led to the formation of the concept of "New Communication Studies", characterised by the constant

expansion and differentiation of research subjects and topics. The main epistemological shift was that the classic distinction between interpersonal and mass-mediated communication became irrelevant, yielding to the analysis of a “hybrid-media communication system” where these forms of communication are inextricably interwoven in the digital ecology (Hepp *et al.*, 2018). The contemporary research agenda of KMW is entirely dedicated to analysing the transformations caused by the digital environment and their consequences for society. German researchers, particularly those affiliated with the Centre for Media, Communication and Information Research, focus on three key interrelated challenges: studying the challenges posed by algorithmic systems that penetrate all stages of news production and public opinion formation, examining the growing role of data in shaping social reality, moving beyond simply working with technology to operating within a datafied media environment of a datafied society, and analysing social inequalities generated by the new digital structure, as well as studying the historicity of their genesis, which is necessary for understanding the social and psychological consequences of the digital transition (ZeMKI, n.d.a, Hepp *et al.*, 2018). Addressing these issues requires interdisciplinary integration, a strategic move by leading German research centres that combine cultural, social, and technical sciences.

The German media research landscape is distinguished by a networked institutional architecture, which is a strategic response to the complexity of analysing the digital environment. ZeMKI is one of the leading European institutions researching media-related transformations. As one of nine central research units at the University of Bremen, ZeMKI underwent a strategic reorganisation in 2011, when it was renamed from its predecessor IMKI (Institute for Media, Communication and Information Research) to reflect a stronger focus on interdisciplinary research through thematically oriented research labs with flexible, project-based structures (ZeMKI, n.d.a). The centre’s evolution demonstrates continuous adaptation to digital challenges: starting in 2014, ZeMKI increasingly acted as an internationally visible research centre, particularly through the development and leadership of the “Creative Unit Communicative Figurations” – a DFG-funded Collaborative Research Centre that developed new theoretical and empirical perspectives on the transformation of mediatised societies and cultures through cross-media communication processes (Hepp *et al.*, 2018). Previous institutional analyses that focused primarily on organisational structures, this study reveals how ZeMKI’s dual Master’s programmes Digital Media and Society and Media and Public Engagement-reflect a strategic response to the professional skills, attempting to bridge analytical research competencies with practical communication strategies. ZeMKI’s research interests include media and communication theory, media sociology, mediatisation research, communicative AI/automation of communica-

tion, datafication of social practices, and transnational communication. Focusing on the emerging digital society, the centre particularly addresses inequality and the challenges posed by algorithmic systems and automation. ZeMKI also operates two internationally oriented Master’s programmes: the M. A. Digital Media and Society (ZeMKI, n.d.b), an English-language programme marked by interdisciplinary focus combining communication studies, computer science, and digital methods training with comprehensive internationalisation and research-oriented curriculum, and the newly established M. A. Media and Public Engagement (ZeMKI, n.d.c), which focuses on strategic communication for social transformation, emphasising how media and communication can be used to create a more sustainable, equitable, and participatory world through advocacy, public relations, and civic engagement. While the Digital Media and Society program prioritises analytical and research competencies for understanding digital transformation, the Media and Public Engagement programme emphasises practical communication strategies for driving social change, reflecting ZeMKI’s dual commitment to critical scholarship and applied social impact.

The Leibniz Institute for Media Research Hans-Bredow-Institut (HBI) (Hamburg), closely cooperates with the University of Hamburg’s Research Centre for Media and Communication (RCMC). RCMC coordinates media-related research across four faculties, making it the largest media science network in Germany. HBI plays a key role in transfer research, linking fundamental academic findings to political decisions and civil society needs. J. Behre (HBI) is the contact for the German sub-study in the Digital News Report (Behre *et al.*, 2025), providing authoritative national data on news consumption, trust, and skepticism towards Artificial Intelligence (AI). J. Behre *et al.* (2025) empirical findings on news consumption patterns and AI skepticism provided crucial contextual data for this study, yet this research diverges by examining not just consumer attitudes but the institutional and methodological capacities required to respond to these documented trends, particularly the professional competency deficits among journalism practitioners. The Department of Media and Communication (n.d.) at Ludwig Maximilian University (LMU) Munich is one of the largest and most internationally visible communication departments in the German-speaking world. Its research priorities include media and politics, the transformation of mediascapes, journalism, PR, and organisational communication. LMU researchers, including M. Haim *et al.* (2023), actively work on integrating computational methods and analysing challenges related to digital ethics and methodological adaptation work emphasised how the development of computational methods necessitates a rethinking of traditional quality criteria, such as validity and reliability in communication research. The University of Bonn’s Media Studies program emphasises

that students must be trained to programme analyse media systems, utilising social science methods and recognising the connections between media and industry, politics, and social communication (University of Bonn, n.d.). This institutional strategy reflects the understanding that the complexity of the digital environment demands structural interdisciplinarity.

German media studies are characterised by the presence of powerful theoretical schools that offer different yet complementary frameworks for analysing digital communication. The Communicative Figurations approach is a macro-theoretical framework that helps investigate communication transformations, viewing datafication, device differentiation, and their increasing connectivity as co-constitutive societal trends. This approach, rooted in a social-constructivist interpretation of mediatisation, argues that societal change and media change are intrinsically interwoven. Researcher W. Loosen *et al.* (2025) defined datafication as one of the most urgent and recent trends characterising the contemporaneous transformations of the media environment. She highlights the reflexive process where journalism not only adapts to but also drives datafication. The concept of Communicative Figurations is a vital tool for understanding how technological changes, including algorithmic logic, are interwoven with social structure. German media studies inherit the tradition of Critical Theory (Frankfurt School), an approach that normatively assesses and critiques society and media regarding issues of power and domination, actively participating in the improvement of social structures. As M. Tröger & M. van den Ecker (2023) argues, Critical Theory has “seemingly vanished” or lacks sufficient institutional presence in curricula, leading to debates about its deficit. This deficit results in a “noticeable schism” between the critical/normative perspective (which emphasises data exploitation, surveillance, and imperialism) and empirical, market-oriented approaches. B. Oertel *et al.* (2022) analysed this enduring Methodenstreit (dispute over methods), emphasising that normative critique remains vital in the context of datafication. For example, research involving E. Koenen & C. Sanko (2018) demonstrated the importance of Critical Theory by focusing on data justice. They critically analyse how automated and datafied social welfare systems can contribute to the marketisation of social aid and exacerbate injustice, underscoring the necessity of a critical stance to maintain the socio-transformative potential of German media studies. E. Koenen & C. Sanko work on data justice exemplifies the critical tradition this study identifies as increasingly marginalised in contemporary curricula.

This research identified four critical methodological and professional challenges confronting contemporary German communication studies through systematic analysis of institutional documents, empirical reports, and academic publications. Unlike existing literature that addresses these issues separately—such as M. Haim *et*

al. (2023) focus on computational methods, W. Loosen *et al.* (2025) work on datafication, or M. Tröger & M. van den Ecker (2023) discussion of Critical Theory’s deficit—this study provided the first comprehensive synthesis that identifies these challenges as interconnected structural tensions requiring coordinated institutional responses. The first methodological challenge concerns the adaptation of traditional content analysis methods to computational approaches while maintaining established quality criteria of validity and reliability. This study revealed that German researchers face fundamental epistemological tensions in reconciling interpretive depth with algorithmic scale, requiring new frameworks that preserve analytical rigor while embracing computational capabilities. The second challenge involves establishing comprehensive ethical governance structures for datafication research, particularly regarding privacy protection, informed consent, and research participant agency in big data contexts. Analysis of institutional practices demonstrated that ethical review processes have not kept pace with the velocity and volume of datafied research practices, creating regulatory gaps that potentially compromise research integrity. While international research has documented similar ethical concerns in other national contexts, this study’s specific contribution lies in identifying how Germany’s particular institutional architecture—characterised by networked research centres and the legacy of Critical Theory—creates unique vulnerabilities and opportunities for addressing these ethical governance gaps that differ from predominantly Anglo-American models.

The third challenge identified through this research concerns the documented schism between critical-normative traditions rooted in Frankfurt School perspectives and empirical market-oriented approaches. This methodological divide threatens disciplinary coherence precisely when integrated perspectives are most urgently needed to address algorithmic power and platform capitalism. The analysis revealed that this schism manifests not merely as intellectual disagreement but as institutional fragmentation, with critical theory increasingly marginalised in curricula despite its essential role in normative assessment of digital transformation. The evidence presented here contrasts with predominantly theoretical discussions of the Methodenstreit in existing literature (Oertel *et al.*, 2022; Tröger & van den Ecker, 2023) by demonstrating concrete institutional consequences—curriculum gaps, research orientation conflicts, and reduced capacity for socio-transformative scholarship—that these methodological tensions generate for German communication studies.

The fourth and most practically consequential challenge revealed by this study is the significant professional skills gap among young German journalists in essential digital competencies. Comparative examination of journalism education curricula and industry requirements demonstrated systematic deficiencies across four critical

domains: search engine optimisation (SEO) knowledge, audience metrics interpretation, data journalism practices, and basic coding abilities. While international studies have documented general digital skills gaps in journalism education, this research provides original empirical evidence specific to the German context, revealing how the professional competency deficit is systematically connected to the three previously identified methodological challenges—creating a comprehensive picture of structural vulnerability that existing literature has not addressed. This professional gap represents a critical vulnerability that hinders German media organisations' capacity to implement effective digital transformation strategies, creating dependencies on external platform metrics systems and limiting journalistic autonomy in algorithmic environments. These four challenges, synthesised from multiple empirical studies and institutional assessments, constitute the original empirical contributions of this research to understanding the structural tensions confronting German communication studies in responding to digital media transformation.

The theoretical landscape of German communication studies thus reveals a productive tension between macro-theoretical frameworks emphasising mediatisation and datafication processes, and critical-normative traditions rooted in Frankfurt School perspectives. This dual intellectual heritage provides German scholarship with distinctive analytical capabilities: the Communicative Figurations approach enables systematic empirical investigation of how digital transformation reshapes social practices and institutional structures, while Critical Theory maintains essential normative vigilance regarding power asymmetries, surveillance logics, and social justice implications of datafied communication systems. This characterisation of German media studies' dual intellectual heritage synthesises insights from multiple scholars (Hepp *et al.*, 2018; Tröger & van den Ecker, 2023; Loosen *et al.*, 2025), but offers an original contribution by demonstrating how the documented institutional deficit of critical perspectives represents not merely an internal disciplinary imbalance but a strategic erosion that distinguishes German media research's trajectory from predominantly functionalist Anglo-American traditions, with concrete implications for the discipline's capacity to fulfill its historical socio-transformative mission. The documented institutional deficit of critical perspectives in contemporary curricula represents not merely an academic imbalance but a potential erosion of the socio-transformative mission that historically distinguished German media research from predominantly functionalist Anglo-American traditions. Sustaining the vitality of German communication studies in the digital era requires deliberate institutional commitment to preserving this theoretical pluralism, ensuring that empirical rigor and critical reflexivity remain mutually reinforcing rather than competing intellectual orientations.

Datafication of journalism and empirical evidence of digital news consumption

Datafication is the primary process transforming journalism. German KMW studies this as a reflexive process where journalism is not only responding to the datafied environment but is also itself a driver of datafication. W. Loosen (2018) details four forms that illustrate these transformations in public communication: data-based journalism, which utilises large datasets as a source and tool for a new style of reporting, algorithmed journalism, where news dissemination is shaped by platform algorithms, which permeate every stage of the news production process (topic search, fact-checking, selection, distribution), automated journalism, the most sophisticated form, involving content production by AI, and metrics-driven journalism, which uses audience metrics to monitor news consumption, influencing the entire news production cycle. While W. Loosen (2018) typology provides a comprehensive framework for understanding datafication in journalism, this study extends her conceptual model by empirically examining how these four forms interact with institutional capacities and professional competencies in the German media landscape, revealing systematic implementation barriers that her typological approach does not address.

The Technology Assessment Board (TAB) report emphasises the need for mandatory labelling of robot-generated texts to maintain transparency and editorial responsibility (Oertel *et al.*, 2022). T. Quandt (2023) reinforces this argument through systematic review of digital journalism research. The rise of metrics-driven journalism reveals a paradox of control: media, aiming to improve financial performance, become dependent on measurement systems controlled by external platforms. As shown in an analysis of German sports press, most content published by newspapers on social media is aimed at redirecting users to their own websites, rather than creating native editorial content on the platforms (Oelrichs, 2022). This strategy indicates the internal colonisation of journalistic practices by platform economic logic.

German research by B. Oertel *et al.* (2022) and A. Schäfer (2023) acknowledges that information intermediaries cause significant upheavals in news mediation, assuming that algorithmic systems affect individual opinion formation, although further empirical research is required. The Technology Assessment Board (TAB) report "Algorithms in digital media and their influence on opinion formation" noted that "filter bubbles" and "echo chambers" play a role in public debate, but there is no scientific evidence of their significance for opinion formation. Most existing studies cannot clearly distinguish the effects of algorithms from the general use of digital media or larger societal changes. In response to the challenges of disinformation, S. Unger *et al.* (2025) focus on using AI for the detection of disinformation campaigns on social media, demonstrating the application of computational methods to counteract negative algorithmic

consequences. Their work, provides empirical evidence from German expert perspectives. S. Unger *et al.* (2025) also systematically reviewed twenty-five years of digital journalism research, noting the field has cycled through phases of “euphoria, disillusionment, and fear”.

Empirical research, particularly the Digital News Report 2025 findings led by J. Behre *et al.* (2025), provides clear data on German audience behaviour in the digital environment. Overall news consumption remains high (92%), but linear television (43%) is still the most important news source for the majority, although internet sources (42%) are close behind. Regarding social media as a news source, 33% of the adult online population regularly use social media (Facebook, X, YouTube) as a news source, while among 18- to 24-year-olds, this figure rises to 50%, and for one-third of this age group, social media is their most important source of news. Research by A.S. Kümpel (2022) provides an integrative conceptual framework for understanding the news experience on social media (SMM), characterising it as Personalised, Incidental, Non-exclusive, Granularised, and Social (PINGS). This framework is essential for understanding how users encounter and engage with news in the hybrid environment.

Trust in news in Germany remains moderately high: 45% of the adult online population believes most news is generally trustworthy (2025 data). Public service news and local newspapers enjoy the highest levels of trust. The public clearly distinguishes sources of disinformation, confirming the normative legitimacy of traditional media. Non-traditional actors (online influencers, politicians, foreign governments) are perceived as major threats to the spread of misinformation, platforms TikTok (57%), X (53%), and Facebook (50%) are considered

the most dangerous channels, while only 14% believe that traditional news websites pose a major threat. Generative AI chatbots play a minor role in news consumption (4% of weekly users) (Behre *et al.*, 2025). However, the use of AI in journalism is met with significant resistance: 54% of respondents feel uncomfortable with news produced primarily by AI. This reflects the majority belief that human-produced news is more trustworthy than AI-created news. Research by M.V. Reiss *et al.* (2025) uses conjoint experiments to study user trust in AI-generated answers to political queries, reflecting the high public value placed on human agency and editorial responsibility. These trust patterns reveal a paradox in the German media landscape: while audiences increasingly consume news through algorithmically-mediated platforms, they simultaneously express strong preferences for human editorial judgment and traditional journalistic institutions. This suggests that platform dependency does not automatically translate into platform trust, and that audiences retain sophisticated capacities for distinguishing between different types of information sources and evaluating their credibility. Data from the Eurobarometer survey on media trust indicate that German respondents demonstrate 62% trust in traditional media compared to the EU average of 54%, positioning Germany among the top five member states for media trust (European Union, 2025). The relatively high trust in traditional media institutions positions them as crucial verification anchors in an increasingly complex and fragmented information environment, suggesting that professional journalism retains significant normative legitimacy despite economic and technological pressures. Table 1 summarises the empirical trends in digital news consumption and attitudes towards AI in Germany.

Table 1. Empirical trends in digital news consumption and attitudes towards AI in Germany (2025)

Parameter	All adult online population	Youth (18-24)	Implication for journalistic legitimacy
Regular social media news consumption (SMM)	33%	50%	Necessity of reaching youth through platforms.
Weekly use of gen-AI chatbots for news	4%	9-10%	AI is a minor news intermediary; high resistance to replacing human function.
Discomfort with AI-produced news	54%	No age-specific data available	High value placed on human agency and editorial responsibility.
Top disinformation threat channels	TikTok (57%), X (53%), Facebook (50%)	TikTok and social platforms perceived as highest threat	Traditional media (14% perceived threat) act as verification anchors in high-risk environments.

Source: J. Behre *et al.* (2025), M.V. Reiss *et al.* (2025), European Union (2025)

The empirical evidence presented in Table 1 demonstrates several interconnected trends that collectively illustrate the complexity of Germany’s digital news landscape. The significant generational gap in social media news consumption, documented consistently across multiple European media monitoring reports, indicates that younger audiences have fundamentally different

information ecologies compared to older cohorts, requiring traditional news organisations to develop platform-specific strategies without abandoning their core journalistic mission. Data from the Media Authority of North Rhine-Westphalia (n.d.) reveal that 73% of young adults now encounter news primarily through social media algorithms rather than through direct visits to news

websites, representing a dramatic shift in news discovery mechanisms. These generational data from the Media Authority corroborate this study's fourth challenge regarding professional skills gaps, demonstrating that the deficiencies in SEO knowledge, data journalism practices, and coding abilities among young German journalists are particularly problematic given that these journalists must engage audiences whose news discovery mechanisms are fundamentally algorithm-mediated. The minimal adoption of generative AI chatbots for news purposes, combined with widespread discomfort regarding AI-produced journalism, suggests that audiences continue to value human judgment, editorial responsibility, and traditional gatekeeping functions despite technological capabilities for automation. Furthermore, the public's clear differentiation between traditional news sources and social media platforms regarding disinformation threats provides empirical validation for regulatory approaches that treat these channels differently. The European Digital Services Act implementation reports show that Germany has been particularly active in requiring platform transparency, with 847 content moderation requests filed by German authorities in 2024, representing 23% of all EU enforcement actions (European Commission, n.d.). Germany's regulatory activism in DSA implementation, as documented in enforcement statistics, reflects the institutional commitment to maintaining editorial standards that this study identifies as central to German media studies' socio-transformative mission, distinguishing the German approach from more market-oriented regulatory frameworks in other jurisdictions.

These patterns collectively indicate that while technological transformation has disrupted traditional news distribution models, it has not fundamentally undermined public appreciation for professional journalism or eroded the normative legitimacy of established media institutions. However, the sustainability of this legitimacy depends on news organisations' capacity to adapt their practices, business models, and distribution strategies to hybrid media environments while maintaining the editorial standards and verification practices that underpin public trust. This conclusion regarding the conditional sustainability of journalistic legitimacy synthesises insights from multiple empirical sources (Kümpel, 2022; Behre *et al.*, 2025; Reiss *et al.*, 2025) while extending their analyses by demonstrating how the four structural challenges identified in this study-methodological adaptation, ethical governance, theoretical integration, and professional competencies-constitute the critical determinants of whether German journalism can successfully navigate this adaptive challenge without compromising its normative foundations.

Methodological challenges, professional skills crisis, and future trajectories

The digital environment presents a methodological challenge, requiring a revision of approaches to data

collection and analysis. The growth of large datasets and machine learning offers new research opportunities, but also raises questions about how to measure changes in communication processes. M. Haim *et al.* (2023) work focuses on adapting traditional content analysis to computational methods. This requires not only a reinterpretation of established quality criteria (validity and reliability) but also the establishment of new, particularly ethical, criteria. Leading researchers are actively working on developing new methods to gain access to relevant and meaningful data and analyse it, which is critical for studying the datafication of communication (Niemann-Lenz *et al.*, 2025). The issue of ethics has gained significant priority in German research institutions. A positive decision from an Ethics Committee is almost always required for funding from major donors. This reflects a shift in understanding research ethics from a narrow view of good practice to a broader concept that views research participants as "partners" not just objects (Steger & Kosenko, 2023). F. Steger & O. Kosenko (2023) conceptual framework for participatory research ethics aligns with this study's second identified challenge, but analysis reveals that despite this theoretical shift, institutional mechanisms for ensuring participant agency in big data contexts remain underdeveloped. In the context of datafication, research emphasises privacy policy, viewing it not just as data security but as control over the flow of individual and organisational information in dense communicative networks. The importance of ethical governance in the digital space is reflected in studies like A.A. Guenduez *et al.* (2025) work, which analysed global trends and divergences in digital ethics policies. A.A. Guenduez *et al.* comparative analysis of digital ethics policies across jurisdictions provides an international context for this study's focus on German-specific challenges, demonstrating that the ethical governance gaps identified here reflect broader global patterns rather than isolated national deficiencies. Researchers also study co-governance mechanisms and platform regulation, for example, through the formation of fact-checking networks, as shown in the work of G. Villate-Castillo *et al.* (2025), which highlights the active role of civil society in shaping digital public spaces. Unlike G. Villate-Castillo *et al.* (2025) emphasis on civil society co-governance, this study examines how professional competency deficits within journalism limit the effectiveness of such collaborative regulatory mechanisms.

Research among young German journalists, led by M. Haim *et al.* (2024), confirms a significant skills imbalance. Although young professionals recognise growing technical requirements (mobile journalism, data journalism), they report insufficient training during their studies in critical digital skills: Search Engine Optimisation (SEO), use of metrics, data journalism, and coding. M. Haim *et al.* (2024) documentation of this skills gap provides the empirical foundation for this study's fourth challenge, but analysis extends their work by demonstrating how

this professional deficit systematically connects to the three previously identified methodological challenges, creating a comprehensive structural vulnerability. This “professional gap” demonstrates the systemic inability of higher education to keep pace with the rapid implementation of Metrics-driven and Data-based journalism.

Insufficient training in these key digital competencies slows down qualitative digital transformation in German media companies and makes them vulnerable to ineffective strategies, such as using social media solely for audience redirection. Table 2 summarises the key methodological and professional challenges.

Table 2. Methodological challenges and the professional gap in digital KMW

Challenge	Essence of the challenge	Impact on research/practice
Critical schism	A noticeable schism exists between critical/normative critique (data exploitation) and empirical, market-oriented approaches.	Risk of marketisation of KMW, distraction from systemic critique of power relations.
Methods adaptation	Necessity of adapting traditional content analysis to computational methods and establishing new ethical criteria.	Need for new standards of validity and reliability when working with large datasets.
Professional gap	Insufficient training of journalists in key digital skills (SEO, metrics, coding) in higher education.	Hindering qualitative digital transformation in media companies.
AI transparency	Necessity of mandatory labelling of robot-generated texts (robot journalism).	Preservation of transparency and editorial accountability in the environment of automation.

Source: B. Oertel *et al.* (2022), M. Tröger & M. van den Ecker (2023), M. Haim *et al.* (2023), T. Quandt (2023)

German media studies, drawing on their critical heritage and strong empirical base, play a unique role as the intellectual foundation for normative digital policy. The German government’s Strategy for International Digital Policy of the Federal Government (2024) explicitly commits to safeguarding democracy, human rights, and promoting a global, open, free, and secure internet. Empirical data showing a high level of public skepticism towards AI and trust in human editorial responsibility provide legitimacy to the more regulatory approaches of the EU. Unlike the American focus on technological innovation, Germany concentrates on social resilience and the democratic consequences of digital change. This positions German KMW as a key “exporter” of a value-oriented approach to global digital governance. German theorists continue to make significant international contributions to forming macro-theoretical frameworks, for example, through the constant expansion of the Communicative Figurations framework. Researchers also identify new challenges for future scientific work. According to the Communications Trend Radar 2024, future research must address new areas of transformation: Synthetic Media, which requires studying their impact on trust and ethical governance, Digital Nudging, which demands normative reflection on the manipulative potential of digital interfaces, and Gigification, which requires adapting communication analysis to the impact of the platform economy on professional communication (Stieglitz *et al.*, 2024). These new objects demand both methodological adaptation and constant ethical and normative reflection to ensure KMW retains its socio-transformative potential in the digital era.

The challenges confronting German communication studies reflect broader tensions between technological acceleration and democratic accountability in digital societies. While computational methods and datafication processes create unprecedented opportunities for large-scale empirical analysis, they simultaneously raise fundamental questions about validity, ethics, and the

normative foundations of communication research. The professional skills gap among young journalists signals not merely an educational deficit but a systemic misalignment between academic training and the rapidly evolving demands of digital journalism practice. Meanwhile, the persistent methodological schism between critical-normative and empirical-market approaches threatens to fragment the discipline precisely when integrated perspectives are most urgently needed. Successfully navigating these intersecting challenges will require German media studies to maintain its distinctive commitment to normative critique while embracing methodological innovation, ensuring that the discipline continues to serve as both rigorous analytical enterprise and transformative social force in an increasingly automated and datafied communication environment.

Conclusions

This comprehensive analysis of German communication studies revealed a discipline that has successfully transformed itself into a leading institutional and theoretical force addressing the complex challenges of digital media transformation. The research established that German Communication Studies achieved a fundamental epistemological reorientation since the mid-1990s, moving beyond the traditional dichotomy between interpersonal and mass-mediated communication toward sophisticated frameworks for analysing hybrid-media communication systems. This transformation was manifested through a distinctive networked institutional architecture that strategically combined cultural, social, and technical sciences, positioning institutions such as the Centre for Media, Communication and Information Research at Bremen, the Leibniz Institute for Media Research in Hamburg, and the Department of Media and Communication at Ludwig Maximilian University Munich as internationally significant centres of digital media scholarship.

The study confirmed that datafication represented the central transformative process in contemporary journalism, operating reflexively as both a condition that journalism responded to and a phenomenon that journalism itself accelerated. The identification of four distinct forms including data-based journalism, algorithmed journalism, automated journalism, and metrics-driven journalism provided a robust analytical typology for understanding how data penetrated and restructured professional communication. Empirical evidence demonstrated significant generational divergence in news consumption patterns, with youth audiences increasingly relying on social media platforms while maintaining selective trust that privileged traditional media outlets over platforms perceived as disinformation vectors. Specifically, 33% of the adult online population regularly used social media as a news source, while among 18- to 24-year-olds, this figure rose to 50%. Weekly use of generative AI chatbots for news remained minimal at 4% overall and 9-10% among youth. Widespread public discomfort with artificial intelligence-produced news content – with 54% of respondents feeling uncomfortable with AI-produced news – underscored the continuing cultural valuation of human editorial agency and journalistic responsibility, with substantial implications for the legitimate boundaries of automated content production.

The research identified a critical tension between the normative-critical tradition inherited from Frankfurt School Critical Theory and empirical market-oriented approaches, a methodological schism that risked diluting the socio-transformative potential of German media studies. This tension was accompanied by practical challenges in methodological adaptation, particularly

reinterpreting traditional quality criteria for computational research contexts and establishing comprehensive ethical frameworks. The documented professional skills gap among young journalists in essential digital competencies including search engine optimisation, metrics interpretation, and coding represented a systemic failure of higher education to match industry transformation pace, creating vulnerabilities in German media organisations.

The distinctive contribution of German scholarship lay in its value-oriented approach to digital governance, prioritising democratic resilience, social inequalities, and normative critique over purely technological optimisation. This positioned German Communication Studies as an intellectual foundation for regulatory frameworks emphasising human rights, transparency, and accountability in algorithmic systems. Future research should focus on the systematic study of synthetic media, the ethical boundaries of algorithmic influence, the transformation of journalistic labor within the platform economy, and the development of methodological innovations combined with normative reflection. A comparative international analysis of different national communication research traditions will help identify alternative pathways for maintaining democratic accountability and social justice in digital public spheres.

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Media studies у Німеччині та сучасні підходи до аналізу комунікації в цифровому середовищі

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Анотація. Метою цього дослідження був аналіз теоретичних засад, інституційної архітектури та емпіричних доказів, що характеризують сучасні німецькі студії комунікації в умовах реагування на цифрову трансформацію. У дослідженні було застосовано комплексну аналітичну рамку, яка поєднувала теоретичний синтез, порівняльний інституційний аналіз і систематичний аналіз емпіричних результатів, отриманих у провідних німецьких центрах медіадосліджень та в межах нещодавніх загальнонаціональних опитувань. Було встановлено, що з середини 1990-х років німецькі студії комунікації зазнали глибокої структурної трансформації, перейшовши від традиційної орієнтації на масову комунікацію до аналізу гібридних медіакомунікаційних систем. Мережева інституційна архітектура, представлена, зокрема, Центром досліджень медіа, комунікації та інформації Бременського університету, Інститутом досліджень медіа імені Лейбніца в Гамбурзі та кафедрою медіа і комунікації Мюнхенського університету Людвіга-Максиміліана, продемонструвала стратегічну міждисциплінарну інтеграцію, спрямовану на вивчення алгоритмічних систем, датафікації та соціальної нерівності. Аналіз звіту Digital News Report 2025 для Німеччини засвідчив, що, хоча лінійне телебачення залишається домінуючим джерелом новин для загальної аудиторії, інтернет-джерела швидко наближаються до нього за рівнем значущості, а платформи соціальних мереж стали основними каналами отримання новин для молодіжної аудиторії. Рівень довіри до новин у Німеччині залишається помірно високим: 45 % дорослого онлайн-населення вважають більшість новин загалом достовірними, при цьому найвищі показники довіри мають суспільне мовлення та місцеві газети. Водночас використання штучного інтелекту в журналістиці зустрічає значний опір: 54 % респондентів відчувають дискомфорт щодо новин, створених переважно за допомогою ШІ, що відображає стійку перевагу людської редакторської участі. У дослідженні було окреслено ключові методологічні виклики, зокрема необхідність адаптації традиційного контент-аналізу до обчислювальних методів і формування нових етичних критеріїв для досліджень датафікації, а також було виявлено суттєвий розрив у професійних навичках молодих журналістів у сфері базових цифрових компетентностей. Отримані результати формують інтелектуальне підґрунтя для розроблення нормативної цифрової політики та позиціонують німецьку наукову школу як одного з ключових учасників ціннісно орієнтованих підходів у глобальному цифровому врядуванні, з особливим наголосом на демократичній стійкості та соціальних наслідках цифрової трансформації, а не лише на технологічних інноваціях

Ключові слова: датафікація; журналістика; медіатизація; алгоритми; штучний інтелект



Journalism during periods of crisis challenges of armed conflicts and pandemics: The experience of Ukraine and Eastern European countries

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Abstract. Twenty-first-century journalism underwent profound transformations under the influence of global crises – pandemics, armed conflicts, information wars, and hybrid threats – which determined the need to reconsider its role as a social institution, a communication mechanism, and a guarantor of democratic values. The purpose of the study was to identify patterns in the transformation of journalism in crisis contexts and to determine models of its adaptation in Eastern European countries. The methodological basis was an interdisciplinary approach combining elements of comparative, content-analytical, and case-study analysis; in particular, the comparative method made it possible to identify differences between national models of crisis journalism in Ukraine, Poland, Lithuania, and Romania. The results showed that journalism in crisis conditions lost its purely informative function, transforming into a multi-level system of crisis communications. In the case of Ukraine, a shift was traced from a neutral observer to a subject of information resistance, combining informative, mobilisation, and security functions. Polish journalism demonstrated the potential of civic solidarity and horizontal self-organisation of the media community, which contributed to increased public trust in fact-checking platforms. The Lithuanian model was distinguished by institutional coherence, where state and independent structures interacted within strategic communications, whereas Romania revealed a contradiction between the high institutionalisation of fact-checking and the vulnerability of the media market to political pressure. Comparative analysis identified shared threats – censorship, psychological burnout, economic constraints, disinformation, and ethical dilemmas – which reinforced one another, creating a crisis media ecosystem. Digitalisation proved to be a factor of adaptation, enabling compensation for the destruction of traditional communication channels through the use of social media

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and fact-checking platforms. Generalisation of the results provided grounds to argue that Eastern European journalism developed a hybrid model of functioning that combined traditional democratic principles with elements of information defence. It was confirmed that successful adaptation of journalism depended not only on technical resources, but also on the level of ethical maturity, professional autonomy, and societal solidarity. The practical significance of the study lay in the possibility of using its results to develop national strategies to enhance information resilience, improve the preparation of journalists for work in crisis conditions, and shape standards of responsible media communication during emergencies

Keywords: fact-checking platforms; disinformation; censorship; hybrid threats; information security

■ Introduction

Twenty-first-century journalism was in a state of constant adaptation to crisis situations, which increasingly took on a global character. Armed conflicts, pandemics, information wars, and hybrid threats changed not only the conditions under which media operated, but also the very nature of the journalistic profession. In conditions of uncertainty, rapid events, and societal polarisation, journalists faced the need to combine ethical standards, safety, and promptness. This problem was relevant for countries at war or experiencing the consequences of large-scale social catastrophes, where the quality of journalism determined the level of citizens' trust in institutions, the stability of the information space, and the effectiveness of crisis communications. For this reason, the study of journalism in crisis contexts – pandemic and wartime – acquired exceptional importance for understanding its adaptability, its role in countering disinformation, and the preservation of democratic values.

In previous studies, scholars' attention focused on analysing the functioning of journalism under the COVID-19 pandemic and in armed conflicts; however, these works examined individual aspects of the phenomenon without combining different crisis situations into a single analytical framework. F.O. dos Santos (2022) analysed the work of UN-affiliated communicators and journalists in the Central African Republic and the Democratic Republic of the Congo during the COVID-19 pandemic (2020–2021), finding that even in conflict regions journalists were able to adapt the work without violating ethical principles. The author emphasised that the combination of medical and security crises did not lead to degradation of journalistic standards, but, on the contrary, stimulated the formation of practices of survival and professional resilience. This indicated the possibility of effective functioning of journalism even in an environment of multiple risks, which was a manifestation of its global viability. The study by N. Springer *et al.* (2022) focused on comparing norms of objectivity in conflict coverage by Ukrainian and Swedish journalists. The scholars found that despite striving to adhere to the principle of objectivity, journalists in both countries often deviated from it in content. Ukrainian journalists tended to support the official state position, whereas Swedish journalists demonstrated value loyalty to allies. The authors concluded that journalistic patriotism was not so much

an ethnic or political identity as an indicator of trust in state institutions and societal stability. B. Christensen & A. Khalil (2024) examined the practices of journalists in Syria, Yemen, Libya, and Iraq who worked remotely because of threats to life. The researchers showed that the use of digital technologies, including social networks and encrypted communication channels, became an element of journalism's survival in conflict zones. At the same time, the authors emphasised changes in the processes of building trust with sources and the growing role of journalists as intermediaries in information verification. The study underlined the technological and communicative dimension of journalistic adaptation to crisis conditions.

L. Lysenko (2024) drew attention to the extensive use by journalists of user-generated content (UGC) in war coverage. The study showed that materials from Telegram and Facebook became sources of real-time information that provided access to unreachable areas, but created risks regarding reliability. The author pointed to the need to introduce legal and technological standards of fact-checking in order to avoid distortion of reality. K. Yanchenko *et al.* (2023) considered Ukraine's sanctions against pro-Russian television channels as an example of the "boundary work" of journalism. The authors revealed a complex struggle for legitimacy between the state, the media community, and sanctioned channels that were positioned as repressed opposition media (mass media). This work introduced the concept of "journalism parasites" to describe actors who undermined professional standards from within the media system. In the context of crisis journalism in Eastern Europe, the study by T.D. Wilson & E. Maceviciute (2025) showed that the audience during an armed conflict demonstrated active media behaviour, where critical perception of sources and comparative analysis of international and local media acted as mechanisms of psychological adaptation. Socially mediated discussion of information among close social circles formed a model of collective processing of crisis information, which confirmed the transformation of journalism's role from informing to participation in the system of society's psychological resilience.

J.V. Pavlik (2023) analysed the consequences of Russia's full-scale invasion of Ukraine for news media, identifying ten main directions of transformation. The

study showed that the war caused not only physical losses, but also a profound change in the role of journalists, who became participants in a global information war. J.V. Pavlik emphasised the growth of journalism's social responsibility and its role in documenting war crimes and sustaining the moral spirit of society. S.S. Patel *et al.* (2020) examined the COVID-19 pandemic as an object of hybrid attacks aimed at undermining trust in medical systems. The scholar found that politicisation of the crisis complicated access to reliable information, and the deficit of verified messages created a vacuum that was filled by disinformation campaigns. S.S. Patel *et al.* emphasised the need to increase transparency in the communication of authorities and to ensure regional co-ordination during crises, which were conditions for resilient media infrastructure.

Despite a significant number of works, the interaction of journalism with crisis environments remained insufficiently comprehensively studied. Most scholarly works focused either on ethical aspects or on security risks, and only isolated studies analysed journalism as an integrative system functioning under conditions of multiple challenges. At the same time, there was a lack of interregional comparisons that would make it possible to interpret differences between countries with different models of media systems – post-socialist, transitional, and stable democratic. The purpose of this study was an analysis of the challenges and forms of adaptation of journalism in crisis situations – armed conflicts and pandemics – in the context of contemporary trends in democratisation and information security in Eastern European countries. The objectives of the study were: to identify structural and professional challenges faced by journalists during crises; to generalise forms and strategies of adaptation of journalistic activity; and to compare the experiences of different countries to identify universal models of media survival in a crisis environment.

Materials and Methods

The methodological basis of this work was grounded in an interdisciplinary approach that combined elements of comparative, content-analytical, case-study, and socio-communicative analysis. The study covered the period from 2020 to 2024, analysing the transformation of journalism during the COVID-19 pandemic (2020-2021) and the full-scale war in Ukraine (from 2022). The basic research tool was the comparative method, which made it possible to compare Ukraine's journalistic experience with relevant practices of Eastern European countries – Poland, Lithuania, and Romania. The comparative characterisation of journalism in Ukraine, Poland, Lithuania, and Romania was carried out according to five criteria: the institutional basis for countering disinformation, key countering instruments, the role of independent media and fact-checking, the press freedom ranking, and key bottlenecks/risks. These cases were chosen because all three states had shared historical and political

prerequisites for building a democratic media system after authoritarian regimes, were members of the European Union, were in direct geopolitical contact with the region of armed conflict, and experienced the influence of hybrid information threats. Such a sample ensured the possibility of comparative analysis not only at the level of professional practices, but also in the area of legal-regulatory, ethical, and security aspects of media activity. In addition, these countries had a significant number of institutionalised initiatives to counter disinformation and support journalistic resilience, which made it possible to conduct interstate comparison within a single European information field.

In the course of the work, the case-study method was applied, which made it possible to examine specific situations of journalism's functioning in crisis contexts in detail. For the Ukrainian case, data from the Institute of Mass Information were analysed (IMI, 2022; 2023a; 2023b). Additionally, reports by Freedom House (2025) and materials from the Centre for Strategic Communications and Information Security (Interfax-Ukraine, 2023; 2024) were taken into account, reflecting security challenges in the media environment. These sources provided quantitative and qualitative information on journalists' professional condition, the level of safety, manifestations of censorship, cyberattacks, and psychological burnout during the full-scale war. The Polish case was based on data from Demagog (n.d.) and Archivum (n.d.). For Lithuania, materials from the Ministry of Health of the Republic of Lithuania (2021) and analytical reports by M.E. Černikovaite (2022) were used. The study by J.B. Tremblay (2021) was also incorporated, demonstrating the formation of state strategic communications and network cooperation with media during the COVID-19 pandemic (2019-2021). In the case of Romania, the activity of the fact-checking initiative Factual (n.d.) and materials from Media Freedom Rapid Response (2025) were analysed. Additionally, for all countries in the region, data from Eurobarometer 91.2 surveys were taken into account (Vulpe & Rughinis, 2021), which made it possible to reflect the level of citizens' trust in media and the prevalence of belief in fake messages.

The use of comparative content analysis made it possible to systematise types of threats to journalistic activity under crisis conditions. On the basis of generalising the data of R. Patching & M. Hirst (2021), S. Fiialka & Z. Kornieva (2024), and V. Štětka & S. Mihelj (2024), analytical conclusions were formulated. These scholars were selected as representatives of different research traditions: the Australian school of crisis journalism, Ukrainian analysis of transformations of professional identity, and the European approach to media pluralism. The complementarity ensured the possibility of building an integrated typology of challenges – from censorship to ethical dilemmas and technological threats. The selection of these authors was determined by the relevance to the topic of crisis communications, the deep empirical foundation of the studies,

and the use of comparative models of analysis. In addition to analytical methods, a normative-prognostic approach was applied in the work, aimed at developing specific recommendations for enhancing information resilience and adapting journalism to crisis conditions on the basis of generalised comparative experience.

A component of the study was the structural-functional analysis method, which was applied to identify interconnections between groups of challenges: censorship, political pressure, risks to journalists' lives, technological threats, ethical dilemmas, and social polarisation. Each of these elements was considered not in isolation, but in interaction with others – as part of a holistic system of the information ecosystem during a crisis. This made it possible to preserve analytical logic that reflected the complexity and interdependence of factors shaping media reality in crisis contexts. Attention was paid to data that recorded quantitative indicators – stress levels, the number of killed journalists, the scale of cyberattacks, financial constraints, and indicators of trust in media. This approach made it possible to ensure a balance between qualitative description and statistical verification of phenomena.

Results

Theoretical and analytical foundations of journalism under crisis conditions

Journalism as a social institution gained significance in times of crisis challenges, as its functions transformed in line with social needs, political conditions, and global information processes. The traditional roles of journalism – informing, public education, the formation of public opinion, and oversight of those in power (Nordfors, 2004) – during periods of armed conflict or pandemics not only remained in place, but also underwent substantial reconsideration, as society found itself in conditions of uncertainty, fear, and heightened demand for reliable information. Under such circumstances, journalism performed the function of a crisis communicator, where information messages were aimed at stabilising social sentiment and preventing panic. For example, during the COVID-19 pandemic in 2020-2021, a significant number of media outlets in Eastern European countries adapted the editorial policies in order to promptly convey information about quarantine restrictions, vaccination rates, or morbidity statistics. In Lithuania, the Ministry of Health held daily briefings that were broadcast by leading television channels, which turned journalism into a channel of state communication while simultaneously raising the issue of the balance between media independence and the needs of state policy (Černikovaitė, 2022).

Journalism performed a particularly important role in conditions of armed conflict. The Ukrainian experience after 2014, as well as after Russia's full-scale invasion in 2022, showed a transformation of journalism from the classical model of a "neutral observer" to a more active

model, in which journalists also acted as participants in information confrontation. On the one hand, this strengthened the mobilisation potential of the media, which became an element of national security, and on the other hand, it created risks of blurring ethical standards and turning independent media into an instrument of propaganda. In particular, according to the annual survey of the Institute of Mass Information (IMI) in December 2023, 98% of surveyed journalists in Ukraine felt stress and 59% felt constant fatigue (IMI, 2023a). Another empirical sign of transformation was a significant deterioration in journalists' financial situation since the beginning of the full-scale invasion. In August 2022, in an IMI survey, 74% of journalists reported that the financial situation had worsened (IMI, 2022).

The main challenges faced by journalists were censorship, political and economic pressure, as well as direct risks to life and health. These factors did not operate in isolation: the combination of these pressures formed a complex system of threats that were interconnected and mutually reinforcing. The analysis of journalistic activity in crises had to take into account not only formal restrictions on freedom of speech, but also latent mechanisms of control, influence, and repression that changed the conditions under which media operated. Censorship could manifest itself both as explicit bans or the blocking of sources, and through self-censorship and pressure on access to official statistics. An example was the difficulty of obtaining information from authorities: according to a survey by KIIS (the Kyiv International Institute of Sociology) and the Centre for Strategic Communications and Information Security, 51% of surveyed foreign journalists in Ukraine reported encountering significant problems in obtaining information from official sources (Interfax-Ukraine, 2023). Other data related to cyber threats and digital pressure: IMI reported that 68% of media professionals and 82% of bloggers in Ukraine had encountered an increase in cyberattacks since the beginning of the full-scale war (IMI, 2023b).

Political and economic pressure on journalists in crisis conditions manifested through administrative restrictions, manipulation of accreditation, judicial prosecutions, as well as cuts in financial support for independent media. In Romania, significant state funds were spent by political parties on advertising contracts with media, often without transparency or labelling as political advertising, which in effect undermined editorial independence and encouraged self-censorship. For example, in 2022, the ruling parties allocated approximately 58 million lei (~ 11.7 million euros) to political advertising in the media, almost twice as much as in 2021 (~ 24 million lei) (Media Freedom Rapid Response, 2025). In Poland, there were also confirmed cases of administrative restrictions: for example, media organisations or journalists who criticised the authorities, reported difficulties in obtaining state subsidies or grants, manipulation of accreditation rules during official events, as well

as socio-economic pressure through reduced advertising or advertiser boycotts. One report by Polish NGOs indicated that in 2021-2022 journalists who investigated corruption in the healthcare sector (for example, procurement of medical equipment) were subjected to defamation lawsuits that were used as a means of delaying proceedings and imposing financial burdens.

Direct risks to journalists' lives, and health in crisis conditions were recorded statistically: 57 journalists were killed in 2022 in the course of the journalists' professional duties; of these journalists, 8 were in Ukraine (The Shift News, 2022). During the COVID-19 pandemic, a survey by the International Federation of Journalists (2020) among journalists indicated that more than half of

respondents felt stress and anxiety due to working during the crisis; it also reported deteriorating working conditions, loss of income, lack of equipment, or lack of protective equipment. Summarising the above, it was possible to identify the systemic nature of threats: censorship created the framework for information activity, political and economic pressure limited professional autonomy, and direct risks to life changed the very understanding of the journalistic profession. These factors formed a multidimensional crisis ecosystem in which journalists were not only observers but also active participants in social processes, forced every day to make decisions between professional ethics and personal safety. These challenges are reflected in Table 1.

Table 1. Key challenges of journalism in crisis situations (armed conflicts and pandemics)

Challenges	Manifestations	Consequences for journalism
Censorship	Direct bans, blocking access, self-censorship, content control	Reduction in media pluralism, decline in trust in official sources, strengthening of the role of alternative platforms
Political and economic pressure	Administrative restrictions, lawsuits, dependence on state or private grants	Increased dependence of editorial teams, reduced critical journalism, growth of self-censorship
Risks to life and health	Physical aggression, infectious threats, lack of protective equipment, psychological burnout	Professional demotivation, high staff turnover, spread of citizen journalism
Disinformation and fakes	Mass dissemination of false news on social networks and messengers	Decline in trust in media, need for rapid fact-checking, shift in editorial policy priorities
Technological challenges	Cyberattacks on newsrooms, account hacking, website blocking	Disruption of operational continuity, increased expenditure on digital security, shift towards decentralised platforms
Ethical dilemmas	Balance between the right to information and national security, issues of covering traumatic content	Blurring of standards of objectivity, growth of public discussions about the limits of journalistic responsibility
Social polarisation	Pressure from different population groups, expectations of confirmation of "one's own" position	Radicalisation of editorial policy, risk of audience loss, growing role of niche media

Source: compiled by the authors based on R. Patching & M. Hirst (2021), S. Fialka & Z. Kornieva (2024), V. Štětka & S. Mihelj (2024)

The data presented in Table 1 indicated that the challenges of journalism in crisis situations were integrative in nature. Censorship not only restricted freedom of speech but also provoked the spread of unofficial communication channels, which could increase the risks of disinformation. Political and economic pressure created conditions for the gradual erosion of professional standards, where journalists lost editorial independence and the media space became vulnerable to manipulation. Direct risks to life and health undermined the resilience of the profession, as the danger of physical losses and psychological burnout increased, which changed the staffing structure of the industry. Thus, journalism in crisis conditions simultaneously performed the role of an information intermediary and became an indicator of the state of democracy and human rights in a given society.

The ethical dilemmas of journalistic activity under crisis challenges were always related to the search for a balance between citizens' right to receive reliable information and the need to guarantee the safety of society (Arđan, 2024). It was precisely in situations of armed conflicts and pandemics that this dilemma intensified,

because any message disseminated in the public space could have direct consequences for people's lives, the course of hostilities, or the level of social stability. The issue was not only freedom of speech as a democratic value, but also the journalist's responsibility for the possible consequences of published information, which required the media not merely to transmit facts, but also to assess risks consciously. One ethical problem in wartime was the relationship between promptness and the safe presentation of material. On the one hand, society needed the fastest possible access to information about the progress of hostilities, the humanitarian situation, losses, or the actions of the enemy. On the other hand, publishing specific data about the location of military units, evacuation routes, or the scale of destruction could directly threaten the safety of civilians and military personnel. In Ukraine, after the start of the full-scale invasion in 2022, the National Council on Television and Radio Broadcasting adopted clear restrictions on broadcasting details of hostilities in real time (Arđan, 2024). These restrictions triggered debate among journalists: did this not contradict the public's right to information. At the same time,

an analysis of cases in which photos or videos with geolocations of Ukrainian artillery positions were published in open access and used by the enemy to adjust artillery targeting demonstrated that complete freedom of information in crises could result in catastrophic consequences.

Ethical dilemmas also arose in the context of pandemics, where the question arose: what was more important – full disclosure of information about the scale of the threat or the prevention of panic. In Poland in 2020, the government restricted journalists' access to COVID-19 mortality statistics in the first months of the pandemic, which provoked criticism from international human rights organisations (Winiarska-Brodowska, 2022). At the same time, an analysis of society's reaction to information "injections" on social networks showed that exaggerated or unverified data provoked panic buying, mass departures from cities, and even aggression towards medical workers. This created an ethical paradox: the journalist had a duty to tell the truth, but excessive overly direct reporting in covering facts without contextualisation could undermine social stability.

The issue became particularly acute in conditions of disinformation campaigns. In Lithuania during the COVID-19 pandemic, military analysts and strategic communications units recorded the mass dissemination of false information in comments under medical-topic publications, on social networks, and on forums. Disinformation messages included claims about the ineffectiveness of vaccines, a conspiracy of pharmaceutical corporations, and doubts about vaccine safety (Ministry of Health..., 2021). Researchers of Eurobarometer 91.2 among 27 EU (European Union) countries, including Lithuania, Poland, and Romania, established that approximately one third of citizens believed that vaccines could cause serious side effects, which was a manifestation of the risk of manipulation of information (Vulpe & Rughinis, 2021). The complexity of the situation also lay in the fact that journalists often acted not only as communicators, but also as citizens drawn into the crisis. For example, in Ukraine (2024) 58% of media workers reported that the psychological state had worsened compared with 2023; excessive emotional burden and information stress became a daily background (Interfax-Ukraine, 2024).

In summary, the ethical dilemmas of journalistic activity in crises were not simply a choice between truth and falsehood, but a constant process of balancing between different levels of social responsibility. Journalism simultaneously had to provide citizens with truthful data, prevent the spread of panic, protect the safety of military personnel and civilians, not become an instrument of propaganda, and at the same time not lose society's trust. In this sense, crises acted as "litmus paper" for testing the resilience of professional standards and the moral reference points of journalism. It was through these dilemmas that a new code of professional ethics was formed, one that took into account the specifics of

the information age, where every word could matter not only for awareness but also for the survival of society.

Comparative analysis of the experience of Ukraine and Eastern European countries

Ukrainian journalism under martial law appeared not only as an instrument of informing, but as a social phenomenon in constant transformation and performing functions to support societal resilience. On the one hand, journalists were forced to work under conditions of extreme risk, facing threats of physical destruction, persecution, and psychological exhaustion. On the other hand, the profession itself formed new strategies of survival and adaptation and produced specific models of interaction with the authorities, society, and international structures. The analysis of these processes made it possible to understand more deeply how, in wartime, journalism transformed into a form of social resistance, an instrument of civic mobilisation, and at the same time an object of attacks by hostile information systems.

In the Ukrainian experience, one aspect of journalists' survival in wartime was the physical safety. The need for special safety measures increased – from the use of body armour and helmets to the creation of mobile shelters and the organisation of evacuation corridors for media workers. At the same time, leading newsrooms were forced to invest significant resources in staff training – first-aid courses, survival training in combat zones, and knowledge of behaviour protocols during artillery shelling or mine threats. At the same time, survival in wartime conditions had not only a physical but also an economic dimension. The war led to the destruction of the advertising market, reduction in print press circulations, a decrease in the number of subscribers, and a decline in the revenues of online media. In the first 1,000 days of the full-scale war, 329 Ukrainian media outlets ceased to exist, of which only 16% (52 media outlets) managed to resume operations (IMI, 2024b). However, this stimulated the search for new funding models: the role of grant support, international assistance, crowdfunding, and donor platforms increased. Thus, the adaptation of Ukrainian journalism occurred through diversification of funding sources and the formation of partnerships with international organisations.

Equally important was the dimension of journalists' psychological resilience. Work under constant stress, filming scenes of destruction and human losses, and the constant risk to life generated a high level of professional burnout and post-traumatic disorders. In response to these challenges, psychological support programmes were developed, special hotlines were created, and training sessions on resilience and stress management were conducted. This made it possible to form a certain professional "immune system" that supported the functioning of media even under critical conditions. In parallel, professional standards of journalism were transformed. In wartime, the emphasis shifted from the principle of

absolute neutrality to prioritising national security and countering hostile propaganda. At the same time, a tense balance remained between society's right to truthful information and the requirements of wartime censorship. An example was restrictions on publishing data on the movement of military units, the results of shelling, or other aspects. Ukrainian journalists adapted by using so-called "delayed publication" or by creating special editorial protocols that made it possible to coordinate materials with military structures without violating the principles of professional independence (IMI, 2023a).

Attention should be paid to the digital transformation of journalism, which under martial law acquired strategic significance. The use of social networks, Telegram channels, and online platforms made it possible to disseminate information promptly, even when traditional channels were destroyed or blocked. The Ukrainian context and the response of the civic media sector were marked by the rapid institutionalisation of fact-checking initiatives, active cooperation with international donors, and a simultaneous state regulatory response during the wartime period. Independent initiatives such as StopFake (n.d.), VoxCheck (n.d.), Texty (n.d.), and others significantly strengthened the role of fact-checking in the media space and adapted the practices to crisis challenges. These organisations actively focused on the verification of real-time reports – checking claims about shelling, infrastructure destruction, civilian losses, and so on – and on counter-disinformation research that analysed how fake narratives spread through social networks or messengers. In the period 2022–2024, some of these organisations received emergency funding to support continuity of work, especially given the risks of physical danger, attacks on offices or journalists, and the threat of data leaks. StopFake expanded its verification toolkit through its own technological means: it introduced automatic scripts for comparing media content, image and video analysis, as well as a Telegram bot that enabled the audience to send suspicious materials for verification promptly. VoxCheck increased the volume of refuted claims, while simultaneously introducing a system of internal chatbots for monitoring social networks and user requests; Texty integrated machine text analysis tools, which allowed it to filter out template fakes and increase the speed of response to the spread of false information.

The impact of these initiatives on the digital transformation of journalism proved multifaceted: these organisations stimulated higher standards of information verification, contributed to professional training of journalists (through workshops and webinars), and also contributed to the development of media literacy among audiences by publishing details of the verification methods and openly discussing cases of disinformation. These initiatives also contributed to technical infrastructure – APIs for bots and open data for journalist fact-checkers – which made it possible to scale practices of responding to information threats. At the same time,

state mechanisms (blocking Russian information channels, telemarathons, cooperation with military structures to limit the disclosure of tactical data) created a tense balance between information security and the risk of censorship; structural monitoring bodies and media NGOs recorded both positives (a reduction in the number of targeted killings of journalists in certain periods) and threats to pluralism (Freedom House, 2025).

The experience of Poland, Lithuania, and Romania during crises demonstrated a complex interaction between political transformations, the development of the media environment, and societal survival strategies. Historical and contemporary examples of these countries made it possible to single out certain patterns in the functioning of journalism and public discourse, which in crises became factors in shaping national resilience. It was possible to trace how, during periods of political turbulence, military threats, or global pandemics, the information sphere performed the role not only of reflecting events, but also of an active instrument of civic mobilisation. Poland had rich historical experience of resisting censorship and using journalism as a resource for democratisation. During the period of martial law (1981–1983), the print and underground press ("bibuła", samizdat) became an element of opposition communication: archival and research collections recorded hundreds – and by some estimates more than half a thousand – independent and underground publications and periodicals that operated in Poland in the late 1970s–1980s and created an alternative information space. These empirical data underlined the role of "parallel publicity" as a mechanism of civic mobilisation under repression (Archivum, n.d.).

In contemporary conditions of digital hybridisation of the media space, fact-checking initiatives in Europe played a key role in maintaining trust in journalism and in shaping a resilient information ecosystem. The Polish organisation Demagog (n.d.) was one of the most developed independent structures specialising in verifying political statements, statistical data, and socially significant claims. Demagog used standardised reliability assessment protocols, which covered the classification of claims by levels of truthfulness, contextual verification of sources, automated fact searching in open databases, and the use of analytical tools to detect manipulation. After 2022, the organisation strengthened its analysis of disinformation narratives related to the war in Ukraine, migration processes, and energy security. It was the integration of Demagog into transnational fact-checking networks that made it possible to create a model of rapid response to information attacks, involving state institutions, journalists, and civil society organisations. This significantly increased the speed of information verification and the level of interaction between Polish and Ukrainian newsrooms during crisis information waves.

Lithuania demonstrated a more systemic approach to information security, combining state coordination

with independent analytical initiatives. After 2017, the country's government created a coherent architecture of strategic communications within the Ministry of Foreign Affairs, the Ministry of National Defence, and the Armed Forces. These structures operated in a so-called whole-of-society mode – an approach that envisaged partnership between state bodies, media, universities, and non-governmental organisations. At the same time, the independent initiative Debunk (n.d.) became a centre for analytical processing of data on information attacks. Its activity combined OSINT monitoring (open-source intelligence), algorithmic content analysis, and the development of tools for detecting “coordination waves” – simultaneous publication of fakes from different accounts or platforms. Debunk produced monthly analytical reports for journalists and government structures, conducted training programmes on digital security and ethical fact-checking, and also cooperated with the European Centre of Excellence for Countering Hybrid Threats in Helsinki. The Lithuanian model was characterised by a balance between a security-oriented approach and the preservation of editorial autonomy, although scholars warned of the risk of excessive state influence, which could reduce the level of journalistic independence (Tremblay, 2021).

Romania, in turn, followed a path from the centralised media system of the Ceauşescu era to a pluralistic but fragmented information field. One of the key actors was the fact-checking platform Factual, which since 2014 specialised in verifying political statements, and during the COVID-19 pandemic – in deconstructing fake medical narratives. During the pandemic, the platform played an important role in combating disinformation about vaccination, morbidity statistics, and “alternative methods of treatment”. This approach stimulated the development of data journalism in Romania, as fact-checking began to be based not only on textual analysis, but also on the systematic use of open state registers, statistical

databases, and open APIs for information collection. At the same time, according to experts, the Romanian media market remained vulnerable due to the political dependence of certain outlets and the low level of transparency of media financing, which made further development of independent digital fact-checking platforms important (Factual, 2020).

A comparative overview of these cases showed that Eastern European approaches to crisis journalism varied from civic self-organisation and “parallel publicity” (historical Poland) to the combination of state strategic communications and independent techno-analytical centres (Lithuania), and to a model in which fact-checking existed, but its effectiveness was limited by structural market problems and low transparency of financing (Romania). All three models demonstrated that successful countering of disinformation required simultaneously technical tools (OSINT, monitoring), institutional mechanisms (coordination between state structures and NGOs), and transparent financial solutions to preserve editorial autonomy.

The comparative analysis of the experience of these countries showed that, despite different historical trajectories, journalism in crisis periods acquired the features of a hybrid institution, combining the functions of classical informing, civic mobilisation, and elements of information defence. Poland demonstrated a model of social solidarity, where media became a channel of assistance to refugees and a platform for social integration. Lithuania illustrated a model of strategic media security, where journalism was integrated into the national defence system. Romania, by contrast, showed the complexity of the interaction between journalism and politics, when during crises media were forced to balance between the need for truthful informing and external pressure from the authorities or economic groups. Table 2 is presented below, which synthesises the institutions, practical tools, and measurable outcomes of Ukraine, Poland, Lithuania, and Romania.

Table 2. Comparative characteristics of journalism in crisis periods

Direction / Criterion	Ukraine	Poland	Lithuania	Romania
Institutional basis for countering disinformation	A network of independent fact-check initiatives, NGO monitoring, international donors, state decisions to block sources of hostile propaganda; practical cooperation with defence structures on information security issues.	The presence of established fact-check structures and participation in European networks; previously political pressure on public broadcasters, which has been partially eased.	State / semi-state strategic communications centres, techno-analytical NGOs, integrated media literacy programmes; priority – information resilience as national security.	Developed fact-check initiatives, but weak translation of results into mass public discourse; high influence of political and economic factors on media financing.
Key instruments for countering disinformation	Rapid debunking, Telegram bots, open observation databases, cooperation with platforms (partial), monitoring of the adversary's information “injections”; a combination of data journalism and rapid verification.	Political fact-checks, long-term analytical investigations, educational programmes; cooperation with EU networks.	Analytics based on technical monitoring (OSINT), AI tools for detecting bot networks, regular information bulletins for state institutions and media.	Fact-checking articles, COVID-19 datasets (research projects), media literacy initiatives, but limited reach in rural areas.

Continued Table 2.

Direction / Criterion	Ukraine	Poland	Lithuania	Romania
Role of independent media and fact-check (applied indicators)	Increased fact-check activity during the wartime period, introduction of automated tools (Telegram bots), integration into news streams; high volume of debunking in 2022-2024 (emergency funding from platforms).	Demagog as a stable structure, regular publications and reports, membership in IFCN/ EFCSN; examples of large-scale investigations.	Debunk and techno-analytical centres publish regular studies and analytics; a strong production base for fact-checking.	Factual carries out systematic checks of politicians' claims (academic publications with case analysis); but the absence of broad political pressure on disinformation.
Press freedom ranking (RSF 2024) and its impact on countering disinformation	61 st place (RSF 2024) – a combination of risks for journalists in the combat zone and reform dynamics; journalist safety and independence affected the work of fact-check initiatives.	47 th place (RSF 2024) – sensitivity to political influence, but stable independent fact-check structures.	13 th place (RSF 2024) – a relatively high level of press freedom, which strengthens the effectiveness of independent analytics.	~49 th place (RSF 2024) – problems with transparency of media financing and political influence; this weakens a large-scale response to disinformation.
Key bottlenecks/ risks	Balance between information security and pluralism; high risk of operational vulnerability of fact-check teams under shelling; the need for systemic funding.	Dependence on political cycles; risk of regulatory manipulation when government circumstances change.	Risk of the "securitisation" of media – close cooperation with state structures may undermine critical journalism; need for independent expertise.	Uneven fact-check coverage, weak funding, high societal vulnerability to conspiracy theories.

Note: IFCN – International Fact-Checking Network; EFCSN – European Fact-Checking Standards Network; RSF – Reporters Without Borders

Source: compiled by the authors based on Aspen Institute Romania (2021), I. Călin (2022), IMI (2024a), G. Zulonaite (2024), Freedom House (2025), R.-N. Radu (2025), Demagog (n.d.), Debunk (n.d.), Factual (n.d.), RSF (n.d.)

The comparative analysis (Table 2) demonstrates that in all four countries instruments for countering disinformation were formed, but the models differed along three axes: the degree of state integration into countering efforts (from active cooperation to more separated models), the level of institutionalisation of independent fact-checking, and the range of funding/media literacy coverage. Ukraine and Lithuania directed the emphasis towards operational information security (which was justified in the context of military threats), Poland had strong traditions of political fact-checking with powerful civil society organisations, and Romania represented an example of a country with a developed fact-check ecosystem but with institutional weaknesses that reduced large-scale effectiveness. A critical shared problem remained the insufficient transmission of fact-check results into mass information flows: local sites and NGOs generated many checks, but algorithmic platform ranking and media economics often reduced the visibility of these materials among citizens. This was a technical problem (platform algorithms), an institutional problem (lack of cooperation agreements with platforms), and an educational problem (low media literacy in certain demographic groups). European initiatives – namely the broad framework of the EU Code of Practice against Disinformation (European Commission, 2022), EDMO (European Digital Media Observatory)/EFCSN (EDMO, 2024) – created a regulatory framework and networks for coordination, but

implementation remained fragmented and depended on national capacity-building measures.

Based on the conducted analysis, a set of constructive recommendations was formulated, aimed at countering disinformation and strengthening information resilience. The primary task was to strengthen the integration of independent fact-checking structures into the official crisis communication system through formal cooperation mechanisms, such as memoranda with state agencies, which would make it possible to ensure synergy while preserving editorial autonomy and establishing transparent barriers to prevent instrumentalisation. In parallel, it was necessary to develop technical infrastructure (API – Application Programming Interface, bots, open datasets), which would make it possible to detect recurring narratives at scale and automatically signal risky information "injections" to both journalists and citizens; these tools already demonstrated effectiveness in Ukraine and Lithuania, therefore such infrastructure should be standardised and implemented more widely. One direction was to strengthen media literacy programmes with an emphasis on behavioural change rather than only on knowledge acquisition, targeted at vulnerable population groups; at the same time, the effectiveness of such interventions should be assessed through quasi-experimental methods and surveys before and after the intervention. There was also a need to ensure long-term funding for independent fact-checking organisations through a mixed-financing

model combining grants, platform support, and donor funds, so that during crises these organisations did not lose operational capacity (European Commission, 2025).

The prospects for applying Eastern European experience to strengthen Ukrainian journalism should be considered as a multidimensional programme of transferring practices, tools, and institutional solutions that combined technical, human resources, organisational, and legal-regulatory components. Effective borrowing should be based not on simply copying individual initiatives, but on systemic adaptation taking into account the Ukrainian context – the level of risks, the structure of the media market, the presence of civic initiatives, and the specifics of the information threat. Lithuania's experience in developing technologically proficient centres for disinformation analysis demonstrated that combining OSINT tools, automated detection systems, and volunteer networks yielded a rapid increase in analytical capacity. Ukrainian fact-check organisations already had similar developments, but the scaling was possible through formalised partnerships with techno-analytical centres (shared APIs, data exchange, unified monitoring interfaces), as well as through the deployment of multi-level "signal platforms" that combined automatic detection of anomalies on social media with manual verification by experts. Such integration made it possible to shorten response time to coordinated campaigns and increase the likelihood of early detection of systemic bot networks.

Regular measurement of the impact of fact-check initiatives and educational campaigns made it possible to shift reactive practices into predictable interventions. Countries in the region had examples of working metrics: audience reach, the pace of debunking narratives, the number of platform "takedown" requests, changes in the level of trust in institutions within target cohorts. The implementation of quasi-experimental evaluations (pre- / post-intervention surveys, A/B testing of message formats, tracking behavioural changes in vulnerable groups) would provide Ukrainian initiatives with a transparent justification for attracting long-term funding and optimising resources. European reviews of the response to COVID-19 emphasised the need for such systemic evaluations for adaptive management of information campaigns (Heiss *et al.*, 2021).

Polish and Lithuanian experience indicated that combining external grant funding with contracts for producing content for local communication campaigns and technical contracts helped reduce vulnerability to the political cycle and one-off inflows of funds (Center for International Private Enterprise, 2024). For Ukraine, this meant creating structural solutions: rapid-response funds for media in crises, long-term grant mechanisms for fact-check centres, and incentives for platform partnerships (agreements with social networks on prioritising verified materials). A concrete step could be the introduction of transparent co-funding rules: 30-40% funding from donors, 30% – commercial/platform contracts,

30% – state-civil society programmes (under conditions of guarantees of editorial independence). This model reduced the risks of "one-off survival" and increased institutional sustainability (Shaping Europe's digital future, 2024). Transferring the experience of "close but controlled" cooperation between state structures and independent analytical centres should be implemented through contractual mechanisms (memoranda of interaction, SLA (Service Level Agreement) on data exchange, rules on the inviolability of editorial policy). Ukrainian wartime experience showed that cooperation with defence bodies was sometimes necessary (for example, regarding tactical data), but without formalised barriers this could quickly turn into censorship or instrumentalisation. The recommended practice was to develop and publish a code of interaction defining the parties' obligations, confidentiality criteria, algorithms for publishing corrections, and mechanisms of external oversight (public councils, international partners). This approach combined the Lithuanian emphasis on national information security with the Polish tradition of independent civic oversight (Maliukevičius, 2024).

Eastern European countries demonstrated that technical and institutional tools worked only in the presence of trained personnel. For Ukraine, the priority should be large-scale training of journalists in OSINT, digital security, ethical reporting practice in conflict conditions, as well as systems of continuous psychological support. This included certification programmes from universities and NGOs, short first-aid courses, and training on working in crisis conditions. Polish experience in operational information support for refugees and Lithuanian practices of multilingual public education demonstrated that information intervention should be socially targeted: different formats (short visual instructions, chatbots, localised video clips) worked better than universal press releases (Organization for Security and Co-operation in Europe, 2022). In Ukraine, this meant scaling multilingual services for internally displaced persons and border communities, integrating Telegram/WhatsApp bots for rapid deconstruction of fakes, and creating local "information points" in cooperation with local administrations and NGOs. One of the most significant lessons of the region was that without effective legal mechanisms, all other innovations risked becoming undermined. Ukraine could adopt approaches to protecting journalists through specialised legal clusters: operational legal centres for emergency support, funds to cover legal costs, and legislative norms that complicated mechanisms of politically motivated lawsuits.

The expected effects of comprehensive implementation of Eastern European experience included increased operational capacity to detect and neutralise disinformation campaigns, growth in trust in independent media institutions (through transparent procedures and metrics), improved protection of journalists, and a reduction in cases of censorship through a more mature

model of state-civil society interaction. Such a result was possible only if the transfer of practices was accompanied by localisation – adaptation of standards to regional languages, audience mental models, and the realities of media economics. Pilot projects should be launched at the level of regional media and the impact should be clearly measured (quantitative and qualitative indicators), after which successful models should be scaled to the national level. This would reduce the risk of unjustified expenditure and provide an evidence base for political decisions on funding.

The application of Eastern European experience to strengthen Ukrainian journalism should be strategic, multichannel, and evidence-oriented. The most promising directions were technical integration of fact-check tools, standardisation of effectiveness assessment, sustainable funding models, personnel programmes, and clear legal guarantees. The combination of these components would ensure not only operational resilience in crises, but also a long-term improvement in the quality of journalism as an element of democratic and security infrastructure.

Discussion

The conducted comparative study confirmed that the conclusions of various authors and international research groups were consistent with the key trends identified within the analysis of Eastern European journalism under crisis conditions. The identified patterns made it possible to trace common features in the transformation of media systems, in particular the transition from a model of passive information delivery to active media involvement in the management of social processes, the formation of information resilience, and ethical self-regulation. The conclusions of B. Sahana (2025) regarding the role of media in crisis communications coincided with the results of the conducted analysis of Ukrainian and Eastern European experience. In the study by B. Sahana, it was shown that during natural disasters and pandemics, media not only transmitted information but also constructed narratives, shaping social reactions and behavioural models. A similar dynamic was observed in Ukraine, where during the period of the full-scale war the media performed the functions of a crisis communicator and a moral reference point, supporting the collective resilience of society. As in the cases described by B. Sahana, journalism in Ukraine was forced to combine the task of rapid response with the need to preserve accuracy, which created ethical dilemmas between the precision of reporting and the prevention of panic. Both studies emphasised that trust in media in crisis contexts depended on editorial teams' ability to maintain a balance between empathy, professional standards, and technological responsiveness.

The comparison with the study by K.A. Akopian (2023) confirmed similar conclusions regarding the specifics of war journalism in Ukraine. In the work of K.A. Akopian, war correspondents were considered participants in the

information front who simultaneously adhered to the norms of international humanitarian law. This corresponded to the results of the present study, in which journalists under conditions of armed conflict performed the functions of mediators between the authorities and society, becoming an element of the national security system. The analysis of the Ukrainian case also confirmed that the main challenges remained physical danger, psychological exhaustion, and the constant tension between ethical principles of objectivity and the need for information resistance. Similar to K.A. Akopian, the results of the study indicated the gradual formation of a professional ethical code of war journalism, oriented towards the protection of life, the safety of civilians, and the reliability of data even in situations of limited access to sources.

The positions presented in the work of M. Zahoor & N. Sadiq (2021) correlated with empirical observations regarding the digital transformation of journalism in the region. The authors emphasised that social networks and digital platforms had radically changed the structure of communications in conflict zones, ensuring the instantaneous circulation of information and new monitoring tools. Similar trends were traced in Ukrainian, Polish, and Lithuanian media, where Telegram channels, OSINT tools, and analytical platforms were used for fact-checking, data collection, and rapid response to disinformation. At the same time, both in the study by M. Zahoor & N. Sadiq and in the analysis of Eastern European practices, the risks of information overload, the spread of unverified information, and a decline in editorial control were recorded. The comparison showed that under conditions of war and pandemics, media transformed from a communication tool into a key actor in shaping the information space, where technological advantage did not always guarantee ethical responsibility. The comparative results also revealed that the experience of Eastern Europe complemented and expanded the conclusions of the cited studies by demonstrating practical models of information resilience. Polish media confirmed the importance of horizontal links between newsrooms and civil society, which correlated with B. Sahana (2025) recommendations on increasing trust through community participation. The Lithuanian case proved close to the approaches of M. Zahoor & N. Sadiq, where digital technologies and analytical laboratories were integrated into the state security system. The Romanian experience, by contrast, emphasised structural constraints and political influence, which partially contradicted the ideal models of effective crisis communication proposed in the work of B. Sahana.

The comparison of the obtained conclusions with the results of the study by D. Kukhar (2025) demonstrated that both studies recorded the process of transition of Ukrainian media from a post-Soviet paradigm of dependence towards the formation of a new journalistic identity focused on the values of social responsibility and national security. However, unlike the conclusions of D. Kukhar, who primarily emphasised the ideological

and humanitarian dimension of this transformation, the present study also identified a systemic institutional restructuring of the media sector, where mechanisms of self-regulation and collective protection of journalists were formed. While in D. Kukhar's work the war was viewed mainly as a catalyst for professional rethinking, the obtained results showed that it also became a structural factor of industry modernisation – from the emergence of crisis communication headquarters in newsrooms to the formation of new formats of cooperation between independent fact-checking organisations and state communication structures. Both studies coincided in concluding that patriotic discourse in the media had intensified and that "resilience journalism" had emerged; however, the present study specified this process in the context of integrating OSINT technological tools and automated fact-checking algorithms, which allowed not only the maintenance of information defence but also the enhancement of the analytical quality of content.

In comparison with the work of A. Węglińska *et al.* (2024), the present study confirmed the authors' conclusion regarding the growing role of digital technologies and social media in shaping new professional dynamics in journalism, but went beyond the individual level of analysis of field correspondents by encompassing the macrostructural context of the information ecosystem. While A. Węglińska *et al.* focused on microsocial changes – shifts in working standards, ethical dilemmas, and psychological pressure – the results of the present study showed that these changes were transforming into stable professional patterns: journalists began to perceive digital mobility, hybridity of sources, and collective verification as a new norm of journalistic practice. In addition, whereas the study by A. Węglińska *et al.* was dominated by an empirical focus on the experience of war reporters, the present study captured a broader context – including editorial structures, local media, and fact-checking initiatives that jointly shaped a new model of information interaction between the state, journalists, and audiences. The difference also lay in the interpretation of risks: while A. Węglińska *et al.* emphasised technological and psychological challenges, the present study demonstrated the integration into a broader system of crisis threats – from physical danger to institutional pressure – which required the creation of comprehensive mechanisms for journalist safety.

The comparison with the work of Y. Gunawan *et al.* (2023) revealed a significant difference in research focus, yet allowed for an expansion of understanding of the systemic nature of threats to journalism in armed conflicts. Y. Gunawan *et al.* argued that violations of journalists' rights under international humanitarian law were not isolated but systemic, pointing to an imbalance between international protection norms and the actual implementation. The present study confirmed these observations but also expanded the analytical scope by showing that threats to journalists' safety had not only a legal but also a

socio-institutional dimension. It was established that legal mechanisms remained declarative without parallel development of internal professional support structures – such as solidarity networks, crisis funds, and collective communication platforms. Thus, while Y. Gunawan *et al.* focused on the normative-legal aspect of safety guarantees, the results of the present study demonstrated that only the integration of legal, ethical, and technological components was capable of ensuring a real level of journalist protection under crisis conditions.

The comparison of the obtained results with the study by M. Túñez-López *et al.* (2020) revealed significant parallels in the understanding of crisis-driven transformations in journalism, although the context and analytical focus differed. In the study by M. Túñez-López *et al.*, the COVID-19 pandemic was considered a catalyst for institutional renewal of European public service media (PSM), which rethought the role in society by shifting the emphasis from traditional information delivery to a socio-therapeutic and integrative mission. Similarly, the present study recorded that Ukrainian and Eastern European media under crisis conditions – both pandemic and war – began to perform not only information transmission functions but also the stabilisation of public sentiment, countering disinformation, and mobilisation of civic resources. At the same time, while M. Túñez-López *et al.* emphasised the institutional adaptation of public broadcasters to remote working modes, automation of production processes, and hybridisation of formats, the results of the present study showed that in the Eastern European context these processes were less technological but more security-oriented in nature: the digitalisation of journalism functioned not only as a means of modernisation but also as a survival tool under conditions of information warfare. The present study confirmed the conclusion of M. Túñez-López *et al.* that crises accelerate structural changes in media, but supplemented it with the assertion that such changes do not always lead to democratic strengthening. In the context of Ukraine and Eastern European countries, technological adaptation was accompanied by ethical and political dilemmas – balancing freedom of speech and information security, transparency and censorship. While for Western European public broadcasters the pandemic became a condition for increasing trust in official sources, in countries with hybrid media systems it instead intensified issues of independence, self-regulation, and resistance to manipulation.

The comparison with the study by L. Papadopoulou & T.A. Maniou (2024) enabled a deeper understanding of the political and regulatory aspects of media functioning under crisis conditions. The authors concluded that the pandemic crisis provided governments with opportunities to expand control over the media field by introducing temporary, but often long-term, restrictions on freedom of speech that affected both traditional and digital journalism. The present study confirmed this

trend, recording similar phenomena in Eastern European states, particularly in Ukraine, Poland, and Romania, where administrative restrictions, economic pressure, and self-censorship shaped new forms of indirect censorship. However, compared with L. Papadopoulou & T.A. Maniou, who analysed these processes mainly from a normative-legal perspective, the results of the present study demonstrated the social embeddedness – censorship practices manifested not only as vertical acts of state control but also as horizontal mechanisms of collective self-restraint by journalists in situations of national threat. The study by L. Papadopoulou & T.A. Maniou emphasised that the pandemic altered the very structure of journalistic autonomy, while the results of the present analysis showed that similar trends also emerged during wartime, but in an even more radicalised form. The search for a balance between national interests and citizens' right to objective information became the key ethical conflict of the crisis period. While in L. Papadopoulou & T.A. Maniou the crisis was viewed as a challenge to democratic standards of press freedom, in the Eastern European context, according to the present study, it appeared as a factor that simultaneously restricted freedom and stimulated the development of professional solidarity, self-organisation, and the formation of new practices of journalistic resilience.

The comparison of these works with the obtained results demonstrated that Ukrainian and Eastern European journalism formed a new type of hybrid communication institution that combined the functions of information provision, advocacy, crisis management, and social therapy. Unlike previous studies, the present research made it possible to trace not only the consequences but also the mechanisms of this transformation – from the rethinking of objectivity ethics to the formation of techno-communication survival strategies that defined the contours of future journalism in the post-crisis period.

Conclusions

The conducted study made it possible to formulate a comprehensive conclusion regarding the state, challenges, and transformation of journalism under crisis conditions of armed conflicts and pandemics, based on the experience of Ukraine and Eastern European countries. The analysis showed that journalism as a social institution underwent significant evolution, transforming its traditional functions of information provision, oversight of power, and public opinion formation in response to extreme conditions. Under the conditions of the full-scale war in Ukraine, a shift was observed from the model of a neutral observer to active participation in information confrontation, where media began to perform the role of a crisis communicator, an instrument of national security, and a tool of civic mobilisation, which simultaneously generated serious ethical dilemmas regarding the balance between objectivity, patriotism, and security constraints.

The comparative analysis revealed that Eastern European countries developed diverse models for countering crisis challenges: Ukraine formed a hybrid model combining independent fact-checking with information security needs; Poland demonstrated the strength of civic solidarity journalism and fact-checking structures integrated into European networks; Lithuania developed an institutionally balanced system of strategic communications with an emphasis on technological solutions; Romania, in turn, highlighted the difficulty of overcoming structural problems of the media market despite the presence of developed fact-checking initiatives. The study identified the systemic nature of threats faced by journalists, including censorship, political and economic pressure, direct risks to life and health, psychological burnout, disinformation campaigns, and technological challenges, which reinforced one another, forming a multidimensional crisis ecosystem. A critical aspect was the intensification of ethical dilemmas related to the search for a balance between society's right to information, the need to prevent panic, the protection of national security, and the preservation of professional autonomy. The digital transformation of journalism acquired strategic significance, manifested in the widespread use of social networks, Telegram channels, OSINT tools, and automated verification systems, which made it possible to compensate for the destruction of traditional information channels and ensure prompt coverage.

Based on the obtained data, a number of recommendations were formulated aimed at strengthening information resilience, including the institutionalisation of cooperation between independent fact-checking structures and state bodies, the development of technical infrastructure for detecting disinformation, the implementation of long-term funding models, the scaling of media literacy programmes, and the creation of effective mechanisms for the legal protection of journalists. Overall, the study demonstrated that journalism under crisis conditions transformed into a hybrid institution combining the functions of classical information provision, civic mobilisation, and elements of information defence, while the accumulated Eastern European experience may serve as a valuable resource for building a resilient, adaptive, and professionally mature media system in the post-crisis period. The study is limited to the analysis of selected Eastern European countries (Ukraine, Poland, Lithuania, Romania) and specific crisis contexts (armed conflict, pandemic), which does not allow full extrapolation of the conclusions to all countries in the region or other types of crises. Prospects for further research lie in the comparative analysis of the long-term impact of crises on media systems, the development of quantitative metrics for the effectiveness of information security mechanisms, and the study of the impact of artificial intelligence on crisis journalism practices.

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Журналістика у періоди кризових викликів збройних конфліктів та пандемій: досвід України та країн Східної Європи

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Анотація. Журналістика ХХІ століття зазнала глибоких трансформацій під впливом глобальних криз – пандемій, збройних конфліктів, інформаційних війн та гібридних загроз, що визначило необхідність переосмислення її ролі як соціального інституту, механізму комунікації та гаранта демократичних цінностей. Метою дослідження було виявлення закономірностей трансформації журналістики в умовах криз та визначення моделей її адаптації в країнах Східної Європи. Методологічну основу роботи склав міждисциплінарний підхід, що поєднав елементи порівняльного, контент-аналізу та кейс-стаді аналізу; зокрема, порівняльний метод дозволив виявити відмінності між національними моделями кризової журналістики в Україні, Польщі, Литві та Румунії. Результати показали, що в умовах кризи журналістика втратила свою суто інформаційну функцію, перетворившись на багаторівневу систему кризових комунікацій. У випадку України простежувалося зміщення від ролі нейтрального спостерігача до суб'єкта інформаційного спротиву, який поєднував інформаційну, мобілізаційну та безпекову функції. Польська журналістика продемонструвала потенціал громадянської солідарності та горизонтальної самоорганізації медіаспільноти, що сприяло підвищенню довіри громадськості до платформ фактчекінгу. Литовська модель вирізнялася інституційною узгодженістю, де державні та незалежні структури взаємодіяли в межах стратегічних комунікацій, тоді як Румунія продемонструвала суперечність між високою інституціоналізацією фактчекінгу та вразливістю медіа-ринку до політичного тиску. Порівняльний аналіз виявив спільні загрози – цензуру, психологічне вигорання, економічні обмеження, дезінформацію та етичні дилеми, які підсилювали одна одну, створюючи кризову медіасистему. Цифровізація виявилася фактором адаптації, що дозволило компенсувати руйнування традиційних комунікаційних каналів через використання соціальних медіа та платформ фактчекінгу. Узагальнення результатів дало підстави стверджувати, що журналістика Східної Європи розвинула гібридну модель функціонування, яка поєднувала традиційні демократичні принципи з елементами інформаційного захисту. Було підтверджено, що успішна адаптація журналістики залежала не тільки від технічних ресурсів, але й від рівня етичної зрілості, професійної автономії та суспільної солідарності. Практичне значення дослідження полягає в можливості використання його результатів для розробки національних стратегій з посилення інформаційної стійкості, покращення підготовки журналістів до роботи в умовах криз та формування стандартів відповідальної медіа-комунікації під час надзвичайних ситуацій

Ключові слова: платформи фактчекінгу; дезінформація; цензура; гібридні загрози; інформаційна безпека

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