

ABSTRACT

The dissertation is submitted for the degree of Doctor of Philosophy (PhD) under the educational program 8D04201 “International law”.

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The topic of the work is “**Mechanisms of Copyright Protection in the Digital Age: Comparison of International Practices**”.

General characteristics of the dissertation. The dissertation explores the mechanisms of copyright protection in the digital age, with a particular focus on adapting legal frameworks to the challenges of the online environment. It examines international treaties, including the Berne Convention, WIPO Internet Treaties, TRIPS, and the EU and US approaches, and compares them with the current state of Kazakhstani copyright law. The research highlights the dualistic nature of copyright, distinguishing between traditional copyright and digital copyright as parallel systems. Special attention is given to issues such as liability of internet intermediaries, technological protection measures (TPMs/DRM), blockchain-based solutions, and the recognition of AI-generated works. The dissertation not only analyzes international best practices but also develops original proposals, including new definitions and legislative amendments, aimed at modernizing Kazakhstan’s copyright law. Overall, it seeks to bridge theoretical insights with practical reforms to strengthen copyright protection in the digital era.

The relevance of the research topic.

The dynamic development of the Internet has led to a practice where some users illegally reproduce and distribute copyrighted works for commercial purposes, and they continue to share copyrighted works. This kind of illegal activity is called copyright infringement or digital piracy and has been the subject of heated debate among copyright holders and academics.

The digitalization of creative content presents unprecedented challenges to copyright law by enabling new forms of private use that are not expressly authorized by copyright rules, while simultaneously allowing right holders to exercise greater control over access and use. Moreover, digital technologies facilitate the perfect, inexpensive copy and distribution of copyrighted works.¹

Copyright infringement on the Internet has had a huge impact on copyright, turning it into a tool with which some users steal creative objects that originally belonged to copyright holders. It should be noted that copyright infringement on digital technologies is perceived worldwide as a serious crime. This reduces the creative potential of society, depriving copyright holders of their legitimate income, and leads to financial losses for everyone who invests in the creative industries.

In Kazakhstan, the number of disputes related to the protection of intellectual property rights has risen significantly. In practice, the courts of the Republic most frequently consider cases concerning the unlawful use of trademarks and copyrighted works.² For example, in the first six months of 2022, courts of first instance examined 164 claims relating to the protection of copyright, whereas appellate courts reviewed 33 copyright cases. During the same time, the Ministry of Internal Affairs reported the initiation of seven criminal proceedings concerning copyright violation.³

The Concept of Legal Policy of Kazakhstan until 2030 identifies key priorities, including addressing the composition of participants in legal relations concerning IP protection on the

¹ Chandrika Mehta, ‘Digitalization of Copyright: Remedies on Infringement’ (2023) 6(2) International Journal of Law Management & Humanities 1043.

² ‘The concept of intellectual property development in the Republic of Kazakhstan for the period 2021-2025’ <<https://www.gov.kz/memleket/entities/adilet/documents/details/166427?lang=ru&ysclid=ldcw09slv5516323991>> accessed 29 July 2025.

³ ‘Copyright Infringement’ (ARBIS) <https://arbis.kz/en/all-articles/copyright/copyright-infringement/?utm_source=chatgpt.com> accessed 08 February 2026.

Internet and resolving questions of ownership of intellectual property created with the involvement of artificial intelligence.⁴

On 20 June 2022, the President of Kazakhstan signed the Law of the Republic of Kazakhstan “on amendments and additions to certain legislative acts on enhancing legislation in the field of intellectual property and state-guaranteed legal assistance”.⁵ This law aims to strengthen the protection of intellectual property rights, harmonize national laws with international treaties, and expand the scope of state-provided legal support.

The relevance of the dissertation research topic is due to the Nation Address by the president Tokayev dated September 8, 2025 which sets out the strategic task of turning Kazakhstan into a digital country, as well as the adoption of the Digital Code of the Republic of Kazakhstan on 09 January 2026 which aims to establish a transparent and effective system of legal regulation of the digital sphere in Kazakhstan.⁶

Moreover, Kazakhstan has recently adopted a law “on Artificial Intelligence” which one of the articles is devoted to copyright in the field of AI.⁷

In our view, the adaptation of Kazakhstan’s copyright law to the digital environment is becoming increasingly important today. This process depends not only on economic requirements but, to a greater extent, on the development of digital technologies and the spread of new telecommunication tools. Intellectual property is no longer merely a driver of economic growth but is also an essential element of national security.

It should be noted that digital technologies and the Internet have become integral parts of contemporary society. Accordingly, ensuring the effectiveness of copyright protection in this sphere is of particular importance. Any three-dimensional work can be reproduced in digital form, stored, and distributed in electronic format. This greatly increases the ease and speed of copying, improves the quality of reproductions, and facilitates the adaptation of works. At the same time, however, it generates significant problems associated with the unauthorized use and mass illegal distribution of digital content.

The rapid development of digital technologies and global social networks calls for new mechanisms of copyright protection on the Internet. Comparative legal research demonstrates that copyright in the digital environment possesses distinct features that require tailored approaches to regulation.

For legal science, and intellectual property law in particular, a vital task is to assess the future development of copyright protection on the Internet and to identify new tools and mechanisms capable of safeguarding the rights and legitimate interests of rights holders, ISPs, and users, while maintaining a fair balance between these parties.

Taken together, the above considerations confirm the relevance of the present dissertation and emphasize the importance of developing effective mechanisms for copyright protection in cyberspace.

Research aim and objectives. The scope of the dissertation includes only the study of the exclusive rights of authors in the digital environment in the form of personal non-property rights. Therefore, the main purpose of this dissertation is to conduct a comprehensive study of the protection of personal non-proprietary copyrights in the digital environment on the global Internet and to propose effective legal mechanisms and approaches to strengthen the Kazakh copyright protection system through a comparative analysis of best practices of the United Kingdom, the United States and the European Union.

⁴ President of the Republic of Kazakhstan, ‘On approval of the Concept of Legal Policy of the Republic of Kazakhstan until 2030’ Decree No. 674 <<https://adilet.zan.kz/rus/docs/U2100000674> > accessed 29 July 2025.

⁵ Law of the Republic of Kazakhstan, on amendments and additions to certain legislative acts of the Republic of Kazakhstan on the issues of improving legislation in the field of IP and provision of state-guaranteed legal assistance No. 128-VII (20 June 2022) <<https://adilet.zan.kz/rus/docs/Z2200000128>> accessed 08 February 2025.

⁶ Digital Code of the Republic of Kazakhstan, № 255-VIII (09 January 2026) <https://adilet.zan.kz/rus/docs/K2600000255> accessed 08 February 2026.

⁷ Law of the Republic of Kazakhstan, on Artificial intelligence № 230-VIII (17 November 2025) <https://adilet.zan.kz/rus/docs/Z2500000230> accessed 08 February 2026.

The central research question of the dissertation is: To what extent is it possible to ensure effective copyright protection in the era of global unlimited internet and digital technologies?

To address this question, the following research objectives were pursued:

- identify the scope and rationale of copyright protection in the digital environment;
- highlight the difficulties and challenges in protecting copyright arising from rapid technological progress;
- identify the legal characteristics of digital works and distinguish them from analogue forms of expression;
- evaluate legal issues surrounding copyright protection of AI-generated works as one of the major challenges in the digital landscape;
- assess the liability of service providers for copyright infringements committed by third parties through Internet networks, with reference to the legal frameworks of the US, UK, and EU;
- develop proposals for improving Kazakhstani legislation, particularly with respect to the liability of service providers.

Object of the thesis is societal relations emerging in the sphere of copyright protection in the digital age.

Subject matter of the thesis consists of scientific works of national and foreign scholars on the problems of copyright protection in the digital environment, legal acts and judicial practice in selected states.

Research methods. To achieve the aims of this thesis, a legal doctrinal approach has been employed, complemented by comparative, historical, and case law analyses. Understanding effective mechanisms for copyright protection in the digital age requires engaging with a number of complex legal issues and theories, including the international regulation of copyright, P2P technology, intermediary liability for third-party content, and anti-circumvention rules.

In our opinion, this approach appears to be most relevant when the work aims to analyse and systematize legal rules and principles relating to copyright protection in the information age. By analyzing statutes, case law, international treaties, and academic articles to reveal gaps and difference or some areas for legal reform, doctrinal research is primarily concerned with identifying the law in its existing form, rather than examining its practical application.

The doctrinal method offers several advantages over empirical or socio-legal approaches. First, the objectives of this thesis are analytical and normative, rather than descriptive or behavioural. The central research questions concern the modernization and coherence of the existing legal framework regulating copyright, rather than the social or economic consequences of legal norms. Furthermore, since empirical and socio-legal methods typically rely on data collection through interviews, surveys, or case studies, they are not well suited for analysing the internal hierarchy, structure, and interpretation of legal rules across different jurisdictions.

The doctrinal approach may help to answer for the question through structured analytical framework to evaluate whether existing Kazakh copyright rules relevantly address the challenges of the digital age. Moreover, through critical analysis of primary and secondary sources, the method allows the author to make evidence-based legal suggestions and theoretical conclusions.

The research draws on a wide range of sources, including international and national legislation, regulations, theoretical works, international conventions and agreements, general legal principles, and case law. Together, these provide the basis for developing a comprehensive regulatory framework for copyright protection in the digital environment.

A comparative analysis of the legislation, case law, and approaches adopted in the United States, the United Kingdom, and the European Union has been carried out to identify more effective mechanisms of copyright protection. In addition, selected legal solutions in these jurisdictions are examined to determine their potential relevance for Kazakhstan.

Case law analysis plays a central role in this research. Judicial decisions on copyright protection in the Internet age are studied to assess how courts interpret and apply relevant norms, as well as to identify trends in judicial reasoning.

Finally, a historical analysis has been conducted to trace the impact of the Internet and digital technologies on online copyright infringement from the era of Web 1.0 to the emerging Web 3.0 environment. In particular, landmark cases and practices from the Napster era through to The Pirate Bay are examined, as these developments had a profound influence on the evolution of copyright protection in the digital age.

Theoretical basis of research topic. Theoretical basis of the thesis was formed by foreign and Kazakhstani scholars:

A main part of the scientific and theoretical basis of our dissertation research were the works of foreign scholars on copyright: D. Bainbridge, L. Bently, A. Johns, B. Klein, A. Kur, J. Litman, G. Moss, A. Murray, P. Samuelson, B. Sherman, S. Stokes and P. Torremans.

The scientific works of Soviet and Russian scholars have been used: B. Antimonov, M. Boguslavsky, S. Boldyrev, B. Dozortseva, A. Garibyan, A. Gavrilova, M. Gordon, B. Koretsky, V. Serebrovskii, A. Sergeev, O. Yoffe, V. Yonosa, A. Zenin and others. Recently, S. Boldyrev in his research elaborated analysis on copyright protection in digital environment in Russian Federation.

A huge contribution to the development of the Kazakh national doctrine of IP made by prominent Kazakhstani scientists such as A. Amangeldy, E. Babykova, Z. Baimoldina, Y. Basin, K. Beisembin, D. Bratus, A. Didenko, S. Idrysheva, T. Kaudyrov, S. Masalina, K. Namengenov, A. Omarova, M. Suleimenov, B. Zhandarbek, K. Zhirenchin, V. Zinchenko and others.

In general, it can be noticed that there is a lack of scientific works, monographic researches on copyright issues in the digital age in Kazakhstan. However, the following scholars have written doctoral research on the different issues of author rights: N. Abdreeva “The objects of copyright according to the legislation of the Republic of Kazakhstan”; R. Abuova “Authorship contract in the civil law of the Republic of Kazakhstan”; K. Beisembin “Rights of authors on works: the problems of theory and legislation in the Republic of Kazakhstan”; V. Zinchenko “Computer programs and databases as objects of intellectual property in the Republic of Kazakhstan”; U. Ikhsanov “Copyright as a subjective civil right under the legislation of the Republic of Kazakhstan”; L. Mamikonyan “Audiovisual works as objects of copyright under the legislation of the Republic of Kazakhstan”; S. Masalina “Copyright Institute in the context of information technology development”; A. Amangeldy “Intellectual property law of the Republic of Kazakhstan at the present stage”.

A similar study to the present dissertation was conducted by Masalina, who also examined the issue of the liability of Internet intermediaries. However, it should be noted that the work lacked practical recommendations, as the author did not provide precise legal norms concerning the liability of intermediaries. Moreover, since the research was carried out nearly two decades ago, it primarily focused on the early stages of file-sharing technologies.

Despite the fact that many works devoted to intellectual property law, currently there are few works in Kazakhstan that address copyright in the context of digital technologies, therefore there is an objective need for a comprehensive and detailed study of IP law issues.

Scientific novelty. This dissertation is one of the first comprehensive and critical studies of copyright protection in the digital environment on the Internet in Kazakhstan, based on comparative and reform-oriented perspectives. One of the features of this research is that it analyzes the transformation of copyright mechanisms with respect to contemporary technologies such as the Internet, AI, blockchain, TPMs and the mass digitization of copyrighted works while previous studies in Kazakhstan mostly focused on the traditional aspects of copyright protection.

There are currently no fundamental works on the research topic in Kazakh civil science, with significantly increases its scientific value.

The dissertation contributes to the development of copyright legislation by substantiating the concept of copyright dualism, namely, the coexistence of traditional copyright and its distinct system in the digital environment. Copyright in the digital sphere is characterized by unique features, methods, principles, and subject matter that differentiate it from conventional copyright. In addition, the dissertation provides a detailed analysis of the liability of Internet intermediaries,

including ISPs, for copyright infringements committed by third parties through the use of online networks, drawing on comparative insights from the best international practices.

The dissertation identifies the principal methods and types of copyright violations in the digital environment, including piracy, plagiarism, unauthorized reproduction of copyrighted works for commercial purposes, the distribution of copies without the consent of authors and right holders, and the adaptation of works without authorization.

Finally, the dissertation develops the author's original definitions of the concepts of 'copyright in the digital environment', 'digital environment' and 'service provider'. It should be emphasized that most theoretical and legal research in this area has been carried out in jurisdictions where digital technologies are highly developed and widely integrated into everyday life, primarily in the European Union, the United States, the United Kingdom, and other technologically advanced states.

Provisions submitted for defense.

1) To ensure the effective protection of copyright in the digital environment, it is necessary to develop doctrinal or legal definitions of new phenomena of legal reality that objectively reflect the legal relations that have emerged in recent years. In this regard, more than a year ago we formulated the author's definition of one of the key terms of this dissertation, the "digital environment" in the following wording:

– 'Digital environment' means a set of infrastructure, technologies, and processes for the creation, circulation, storage, transmission and use of digital objects, as well as for the exercise and transfer of right to them, regardless of the territory where they are located or where the rights to them are registered.

However, on January 9, 2026 Kazakhstan adopted the Digital Code, Article 1 of which defines digital environment as a set of infrastructure, technologies, processes and conditions for the creation, circulation, storage, transmission and use of digital data and digital code, as well as the exercise and transfer of rights to them, regardless of the territory of their location or the registration of such rights, insofar as it concerns social relations regulated by this Code.

However, a drawback of the definition contained in Article 1 of the Digital Code of the Republic of Kazakhstan lies in the fact that it refers to both "digital data" and "digital objects". In reality, digital data, including Big Data, personal data and other forms of data also constitute digital objects and therefore should not be included in the definition as a separate category. On this basis, the author's proposed definition appears to be more accurate.

The next important concept that forms part of the subject of this research is the concept: – 'Copyright in the digital environment' represents a distinct category of legal relations, encompassing a multifaceted legal framework that regulates relationships arising within the information and communication sphere among authors or right holders, internet intermediaries and user;

It is proposed to incorporate these definitions developed by the author into the Civil Code of the Republic of Kazakhstan by introducing Article 980-1 (see Application 1).

2) The rapid development of new technologies has introduced additional challenges for copyright law, particularly in relation to P2P technologies, BitTorrent services, and AI. The use of such technologies is carried out by important actors such as service providers. However, their role in copyright legislation has not yet been clearly defined, and their rights and obligations have not been established. Many of these technologies are exploited by end-users to infringe copyright in the digital environment. It has demonstrated that copyright law has not effectively adapted to the challenges of the digital environment.

Thus, to better address these challenges effectively, it is proposed that service providers, including access providers and hosting services should play an active, cooperative role in copyright protection while maintain the balance user's rights and innovation. The author proposes introducing the definition of a "service provider" into the Article 2 of the Copyright Law (see Application 1);

3) Digitized works over past two decades represent a new form of expression of creative results, existing in electronic or code-based form and functioning within information and communication networks.

Due to the mass digitization of works without notifying and the permission of authors and their heirs, both authors and their heirs have only recently begun to recognize the potential risks of copyright infringement, while entities engaged in digitization projects often do not fully realize that digitization and dissemination of works may violate exclusive rights.

In this regard, it is proposed to supplement paragraph 1 of Article 972 of the Civil Code “Types of Copyright Objects” with a new subparagraph 13, defining “all types of digitized works” as copyright objects. This amendment would enable authors of works digitized without their permission and notification and their heirs to receive protection of intellectual property rights for the period set by law in cases of infringement through the mechanisms already established under the Civil Code and the Copyright law.

4) On the basis of comparative legal research into the protection of AI-generated works, it has been argued: First, the dissertation contends that copyright protection should extend to works produced with the assistance of AI systems, provided that such works involve substantial human creative input. This approach distinguishes AI-assisted creations from those autonomously generated by AI without meaningful human intervention. Accordingly, the traditional concept of human authorship remains the most appropriate and legally sound framework for determining authorship in cases involving AI-generated works.

Given that an AI system functions merely as a technological tool, the user who makes a significant creative contribution to the resulting work should be recognized as the rightful owner. Conversely, the developer or owner of the AI system cannot be considered an author or owner, as they do not determine the final creative expression produced by the system.

Consequently, users of AI systems bear the primary responsibility for the lawful use of such technologies and may be held liable for copyright infringements arising from the dissemination of use of AI-generated outputs.

In this regard, it is proposed to supplement paragraph 1 of Article 972 of the Civil Code “Types of Copyright Objects” with subparagraph 14, according to Application 1.

5) Internet intermediaries play a central role in the online distribution of copyrighted content, serving as a critical link between copyright holders and the public. Their importance has been described as the main challenge for copyright in the digital environment, since their activities of service providers also brought about the increase of online copyright infringement. In order to strengthen the protection of copyright in the digital environment in cases of infringement involving service providers, the author proposes supplementing Chapter 5 of Civil code of the Republic of Kazakhstan with a new article 970.1 entitled “The liability of service provider” (see Application 1).

6) The notice-and-takedown procedure has become a central tool in combating online copyright infringement. One of the advantages of this procedure is that it provides rights holders with inexpensive and quick process for copyright enforcement in the digital environment, while obtaining a court injunction may take considerably more time and prove less cost-effective.

Under this system, service providers are required to remove allegedly infringing material once they receive notification from authors and other right holders. The notice-and-takedown procedure achieves its effectiveness when there is clear legal certainty, in particular if there are certain elements. A draft of the rules which obliges service providers to immediately comply with the notices of right holders, and which is presented as a draft order of the Ministry of Justice of the Republic of Kazakhstan, has been developed by the author and is included in Application 2.

Practical importance of the thesis. The conclusions and main provisions of this research may be applied in lawmaking practice to improve copyright legislation; in law enforcement practice; in the drafting of contracts related to the creation and use of copyrighted works and the

provision of services by internet providers; and in the teaching of civil law and intellectual property courses.

Approbation of the research results. The findings of the thesis are reflected in the following articles:

1. Article “Copyright protection in the Internet age: Whether copyright can combat against Peer-to-peer technology” // Право и государство 2021. № 1 (90). 73-88pp;

2. Article “Digital piracy: Responsibility issues of Internet service providers” ENU Gumilyov Law Bulletin, No 4. (133)/ 2020, 23-32pp;

3. Article “Copyright protection on works generated by artificial intelligence” Bulletin Institute of Legislation and Legal Information of the RoK, № 2(77) 2024, 146-157pp;

4. Article “Protecting copyright in the Internet age: The Kazakhstani perspective” ENU Gumilyov Law Bulletin, No 4. (149)/ 2024,71-83pp;

5. Article “Copyright infringement in the digital age: The case for reform to Kazakhstan’s copyright laws” Access to Justice in Eastern Europe, 7 (4) 2024 242-266pp;

6. Article “Copyright Protection on Works Generated by Artificial Intelligence” Science and Innovation, Vol. 21 (1) 2025, 112-124pp;

7. Article “Information Intermediaries in the Digital Environment: Copyright Problems and Trends of Legal Regulation” Al-Farabi Kazakh National University Journal of Actual Problems of Jurisprudence, 1(113) 2025, 106-114 pp.

Research design. The structure of the dissertation consists of an introduction, four chapters, eighteen sections, a conclusion, a list of references, and two applications; the total length is 173 pages.

Chapter 1 examines the theoretical, historical, and legal foundations of copyright protection in the digital era. It analyses copyright both as a set of subjective rights belonging to authors and right holders and as an objective institution of civil law governing relations arising from the creation and use of works. The chapter explores the main rationales of copyright protection, including cultural, economic, personality-based, and public approaches, as well as its key features, such as exclusivity, territoriality, originality and the distinction between ideas and expression. It also reviews the development of international copyright law from the Statute of Anne and the Berne Convention to TRIPS and the WIPO Internet Treaties, showing how copyright norms have gradually adapted to technological change. Special attention is paid to the impact of digital technologies on copyright, including the emergence of digital works, websites, software and digitized content, as well as the challenges of online infringement, jurisdiction and enforcement.

Chapter 2 examines the principal digital challenges of copyright protection, focusing on online infringement, file-sharing technologies, the role of internet service providers, and AI-generated works. It analyses online copyright infringement as a structural problem of the digital environment, and low cost of copying, streaming, and distributing protected works through the Internet. The chapter examines the evolution of file-sharing technologies from Napster to Grokster to BitTorrent and The Pirate Bay, demonstrating how technological change has complicated enforcement and expanded the scope of secondary liability. It further explores the role of internet intermediaries and service providers as key actors in the online circulation of copyrighted content, highlighting the tension between copyright enforcement, safe harbour protection, and fundamental rights such as freedom of expression, privacy and access to information.

Chapter 3 analyses international approaches to copyright protection in the digital environment, focusing on the regulatory models of the US, the UK, the EU and Kazakhstan. The chapter examines how different jurisdictions address online copyright infringement, intermediary liability and enforcement mechanisms in response to technological developments. Particular attention is given to the US DMCA and its safe harbour regime, the notice-and-takedown

procedure and doctrines of contributory and vicarious liability. The UK approach is analysed through the CDPA 1988 and the DEA 2010, highlighting the use of court-related website blocking and other judicial remedies. The EU framework is examined through key instruments such as the Information Society Directive, the E-Commerce Directive and the Directive on Copyright in the Digital Single Market, which regulate intermediary liability, technological protection measures, and online platform responsibilities. The chapter concludes with an analysis of Kazakhstan's legal framework, identifying significant legislative gaps, including the absence of clear rules governing service providers, digital works, and notice-and-takedown procedures.

Chapter 4 examines remedies for copyright infringement in the digital environment, focusing on DRM, CC licensing, and blockchain technology. It analyses DRM as a technological solution that enables copyright holders to control access to and use of digital works through encryption, watermarking, and other protection measures, while also highlighting its limitations, including circumvention risks and potential restrictions on lawful use and access to information. The chapter further explores CC as a flexible licensing model that allows authors to share certain rights while retaining copyright protection, thereby facilitating the legal dissemination and reuse of creative works. Finally, the chapter considers the potential of blockchain technology for copyright protection, licensing and monitoring of digital works through decentralized ledgers and smart contracts. It concludes that effective copyright protection in the digital environment requires a balanced combination of legal regulation and technological solutions.

In conclusion, the dissertation has addressed pressing and significant issues for law enforcement practice, achieving the aims and objectives set for the research through a comprehensive analysis of these problematic questions.