

[https://doi.org/10.52326/jss.utm.2022.5\(4\).01](https://doi.org/10.52326/jss.utm.2022.5(4).01)
UDC 347.78



CHALLENGES AND STRATEGIES FOR COPYRIGHT PROTECTION IN THE DIGITAL ERA

Natalia Mogol ^{1*}, ORCID: 0000-0002-1844-3868,
Rodica Crudu ², ORCID: 0000-0002-6470-8601

¹State Agency on Intellectual Property, Chisinau, MD 2024, Republic of Moldova

²Academy of Economic Studies of Moldova, Chisinau, MD 2005, Republic of Moldova

*Corresponding author: Natalia Mogol, natalia.mogol@gmail.com

Received: 08. 25. 2022

Accepted: 10. 17. 2022

Abstract. In the digital era, for many industries, especially creative ones, the copyright protection became one of the core issues to achieve and maintain a competitive advantage. Taking this into consideration, for modern industries intellectual property is a key value generator and a success factor in competitive markets. Thus, nowadays, we assist to a continuous intensification of attention paid by both business leaders and public authorities to the field of intellectual property. Although the major features of the digital era impact every domain of intellectual property, the most affected fields are copyrights and related rights. The challenges of the intellectual property system in general and particularly of the copyright to respond to economic realities, but also the appropriate strategies for their further development in the digital era, is the object of study of this paper. The aim of this paper is to consider the copyrights protection system from the perspective of a plurality of relevant factors that directly or indirectly affect and are affected by intellectual property: law, technology, public policy, economics, and sociology. There is the conviction that only considering all those factors it will become possible to find the correct answer to the question regarding how to better address the issue of copyright protection in the digital era.

Keywords: *intellectual property, copyrights, digital economy, challenges, blockchain.*

Rezumat. În era digitală, pentru multe industrii, în special cele creative, protecția dreptului de autor a devenit una dintre problemele de bază pentru obținerea și menținerea unui avantaj competitiv. Pentru industriile moderne proprietatea intelectuală este un generator cheie de valoare și un factor de succes pe piețele competitive. Astfel, în prezent, asistăm la o intensificare continuă a atenției acordate atât de oamenii de afaceri, cât și de autoritățile publice din domeniul proprietății intelectuale. Deși caracteristicile majore ale erei digitale influențează fiecare domeniu al proprietății intelectuale, cele mai afectate domenii sunt drepturile de autor și drepturile conexe. Provocările sistemului de proprietate intelectuală în general și în special cele ale dreptului de autor, necesitatea de a răspunde realităților economice, dar și gândirea unor strategii adecvate pentru dezvoltarea lor ulterioară în era digitală, constituie obiectul de studiu al acestei lucrări. Această lucrare se bazează pe analiza

problemelor din perspectiva unei multitudini de factori relevanți care afectează direct sau indirect și sunt afectați de proprietatea intelectuală: drept, tehnologie, politici publice, economie și sociologie. Există convingerea că doar luând în considerare toți acești factori va deveni posibil să se găsească răspunsul corect la întrebarea privind modul de abordare mai bună a problemei protecției dreptului de autor în era digitală.

Cuvinte-cheie: *proprietate intelectuală, dreptul de autor, economia digitală, provocări, blockchain.*

1. Introduction

The current rapid development of the digital economy is conditioned by significant innovations in six frontier technologies: artificial intelligence; cloud computing; robotics; blockchain; the Internet of Things (IoT); and 3D printing [1].

Being continuously developed and combined, the mentioned technologies create unprecedented possibilities in the development of new branches of the economy which, according to experts, would have triggered the fourth industrial revolution [2].

This fourth revolution, according to specialists [3], will change the way the world economy is organized, just as the steam engine caused the first industrial revolution, the electricity and mass production - the second industrial revolution, the PC and the Internet - the third industrial revolution.

As the current situation demonstrates, the use of frontier technologies in the field of culture, innovation and science has grown significantly in recent years. At the same time, a significant development of these technologies is forecast for the next period.

Particularly, according to [4] *"artificial intelligence (AI) systems have become almost ubiquitous in meteorology and in pharmaceutical research and are making deep inroads into media and journalism. Outside these distinct domains, AI systems are being used to generate diverse literary and artistic content, including translations, poems, scripts, novels, photos, paintings, etc. Likewise, a wide variety of innovative and inventive activity relies on AI systems for its development and deployment, from facial recognition to autonomous driving"*.

In the lights of the above, it is accepted that in the digital era the innovation in its broadest sense is crucial to achieve and maintain a competitive advantage at both micro and macro levels. However, the progress of the scientific and technological advancements contributes to the emergence of new concerns regarding protection of intellectual property rights.

According to [5, 6] in recent years, significant academic attention has considered how intellectual property (IP) law applies to the revolutionary digital era, AI products and processes, and how AI may change the practice and doctrine of IP law.

Nowadays, the view that intellectual property plays a key role in building and strengthening a knowledge-based digital economy is no longer contradicted, as it is axiomatically accepted by both business and decision makers at various levels [7]. However, some conflicting views remain regarding the direction the development of the intellectual property system should take in order to ensure better synergy between the regulatory framework and current economic trends.

According to certain opinions (shared by the authors) [8] the dynamic development of AI and other frontier technologies requires increased attention from decision-makers to ensure the effective development of the intellectual property system and to mitigate harmful socio-economic implications.

Even if, according to Boshier et al [9] intellectual property has always been interconnected with the development of new technologies, the authors share the view that AI and other frontier technologies could endanger the existing IP system, raising fundamental questions about authorship, property rights over IP objects and, obviously, IPR infringement.

In the present study we will not agree with those opinions according to which the intellectual property system established more than a century ago with subsequent changes fully corresponds to the requirements of the contemporary economy, nor with those according to which the intellectual property system is outdated [10] and shall be largely canceled [11]. We will rather focus on delineating the trends and challenges facing the intellectual property system in dealing with the fourth industrial revolution we are witnessing today, but also on identification of potential solutions to overcome the constraints found.

The literature review reveals that the academic attention has focused on a rather narrow (although undoubtedly important) set of issues within the topic, that is why we wish to widen the focus away from the doctrinal question of whether machine learning algorithms can be authors and inventors, towards a range of questions that have so far been under-analyzed. The paper is merely focused on copyright because it protects the intellectual property domain that it is most frequently encountered by the general public. However, some findings are relevant in the context of other IP rights (patents, trademarks, industrial designs, etc.) and we hope the study will add certain value to how IP law interacts with frontier technologies in the future.

2. Materials and Methods

This paper builds on the regulatory framework available in the field of intellectual property, focusing on trends and constraints of the intellectual property system and implicitly of the copyright system in the context of the digital economy.

In order to achieve the stated goal, several research methods have been used. For researching the theoretical aspects and literature review, analytical and induction methods have been applied. Based on empirical and historical methods, the study includes a comparative analysis of the current situation at national, regional, and international levels and the need to improve the existing copyright system, to ensure a favorable climate for its further development.

The above-mentioned methods, combined with systemic and synthesis methods allowed the authors to identify the main trends in relation to the copyright development and challenges in the digital era, as well as interpret and argue on different approaches promoted by various scientists.

The combination of several research methodologies helped the authors to provide scientifically sound findings, highlighting the main challenges the protection of copyrights holders cope within the digital era, as well as shape some recommendations to overcome these challenges.

3. Trends in the copyright's protection framework

The creation, promotion, transmission, publication and use of copyrighted works has been continuously facilitated over the past decades by the development of information technologies.

New ideas are generated every minute, manufacturers, in their sought to diminish their production costs and assure comparative advantages, are looking for new ways of working. The speed of new innovative products launched on the market increased, the innovation life

cycle shrank, the competition became fiercer, etc. All these factors determined companies to adjust their business model and the innovative products to be shaped by the way more elements that go beyond the traditional approach towards intellectual property protection (i.e. intangibility of the digital content, data sets and database rights, etc.).

At the same time, the characteristics of the digital economy: globalization, interdependence and interconnection, dematerialization, data transparency, rapid development of innovation, but also the development of new domains and products have a direct impact on the intellectual property system driving a new spiral of legislative framework which would ensure the system's ability to cope with the new economy.

In this context we agree with Deloitte affirming that *"the evolving needs and considerations for IPR protection and economic security require a multifaceted approach. Governments and the private sector should consider using tailored approaches to safeguard IP rights"* [12].

For these reasons, the phrase *Innovate or die* traditionally attributed to Peter Drucker is more applicable to the existing intellectual property system itself than ever before. The innovation in the reference field is to ensure a correlation of the protection system with the requirements of the digital economy, by using legal, technological and economical tools.

It is generally accepted that the rapid technological developments continue to impact the way and means by which copyrighted works are created and exploited. Thus, **legal framework** is constantly being revised at national, regional and international levels to meet the requirements of the new economic realities. Relevant examples of adjusting legal framework to the digital era requirements are registered in all the fields of IP (e.g. in the field of trademarks [13], by introducing new types of trademarks (holograms, audio-visual, etc.); in the field of industrial design [14] by extending to new forms (graphical interfaces, pictograms, etc.); in the field of inventions [15] by the appearance of products from processes that did not exist in the past (artificial intelligence, bio-engineering, etc.), but in this study we will focus on copyrights and related right legal framework development.

From the beginning we would like to mention that even if huge efforts have been done in the past decades in order to harmonize the legal framework applying to copyrights and related rights there are still many differences in the approaches to this field. Particularly, the establishment of the legal framework is specific and much influenced by the general public culture and historical commons.

Many "civil law" countries (including Republic of Moldova) have in their copyright legislation a provision that the creator of an artistic work has an inalienable right—called moral right. This right protects both the integrity of the work and the artist's interests against the unauthorized distortion, mutilation or other derogatory act liable to prejudice his honor and reputation as an author. Moral rights are intended to protect an author's name, reputation, and work integrity; these things are seen as integral to the very act of creation, which is why they are regarded as perpetual and irrevocable as long as the work exists. As a consequence, moral rights shall not constitute the object of renunciation or cession and the author shall maintain his moral rights also when he transfers his economic rights. Article 6 bis of the Berne Convention [17] indicates: *"Independently of the author's economic rights, and even after the transfer of the said rights, the author shall have the right to claim authorship of the work and to object to any distortion, mutilation or other modification of, or other derogatory action in relation to, the said work, which would be prejudicial to his honor or reputation."*

The common law countries (e.g. United States of America and United Kingdom) see the authorship differently, viewing the copyrighted works as goods that may be freely traded, under the control of the right holder whatever person (or corporation). There is no culture of moral rights in the British and U.S. tradition.

China and many other Asian cultures offer another example of how copyright tradition differs globally. In these countries, the concept of intellectual property in creative expression is completely foreign.

Thus, acts of creation are seen as resulting from the contributions of the ancestors. It is in the Asian tradition to regard authors as people who express simply what is in the air. What is seen in Europe and the United States as an individual act of creativity would be seen in China as a person expressing an ancestral idea providing part of the process of transmitting and expanding a society's cultural heritage. In the context of existing social perception, it is not expected that China will pay more attention to copyright enforcement in the near future.

Also, it is to be mentioned that new forms of works are still subject of different regulation by different national regimes (e.g. there are countries like Rep. of Moldova in which databases are protected by copyright law, on the other hand in 1991 the U.S. Supreme Court, in *Feist Publications Inc. v. Rural Telephone Service Co.*, ruled that simple collections of facts and information routinely presented in databases (for example, an exhaustive list of businesses in a particular field, presented alphabetically) would not be protectable because the "sweat of the brow" principle ensuring the protection of copyright works is not respected)

At the same time, at the *international level*, computer programs were included in the copyright laws in the early 1990s as a work of literature. The Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) [17] provided that software are protectable by copyright beginning with 1995. As software became an increasingly important economic good the ownership mechanism is needed to provide an incentive for the programmer to invest in its creation. Copyright protects the literal expression of a computer program, copyright does not provide for ownership of the concepts of a software program. Namely, copyright does not protect any functional behavior of the software (i.e. its algorithms), and nor can it protect the design or interfaces of a computer system running the copyrighted software program. Thus, other programmers can legally develop a different software solution without having actual notice of the code and create a functional clone of this software solution.

Another example of international legal framework accommodation to the technological progress is the Beijing Treaty on Audiovisual Performances [18], adopted on 24 June 2012, which entered into force on 28 April 2020. The main purpose of the Beijing Treaty was to ensure the adaptation of copyright protection for singers, musicians, dancers and actors in performances, film and television audiovisuals; including those of musicians or other audiovisual platforms. The adoption of the Beijing treaty was impelled by the lack of appropriate legal framework for new forms of copyrights.

Another regulatory reform designed to face the challenges of the digital era in the copyright field was the adoption at the regional level of the Directive (EU) 2019/790 [19] amending Directives 96/9 / EC and 2001/29 / EC rules for the adaptation of certain exceptions and limitations of copyright and related rights to the digital and cross-border environment, as well as measures to facilitate certain licensing practices, in particular but not exclusively with regard to the dissemination of works in outside the commercial circuit and other protected objects and the online availability of audiovisual works on video platforms on demand, in order to ensure wider access to content.

The more significant but also controversial innovation of this legal document concerns the provisions regarding the use of protected content by online content-sharing service providers (e.g. YouTube). This recently adopted act stipulates that *"the Member States shall provide that an online content-sharing service provider performs an act of communication to the public or an act of making available to the public when it gives the public access to copyright-protected works or other protected subject matter uploaded by its users.... An online content-sharing service provider shall therefore obtain an authorization from the right holders, for instance by concluding a licensing agreement, in order to communicate to the public or make available to the public works or other subject matter"* [19].

It is to be noted that few days before entering into force of the mentioned Directive, Judgment of the European Court of Justice (Grand Chamber) of 22 June 2021 in the *Frank Peterson v Google LLC and Others and Elsevier Inc. v Cyando AG* established that *"an online content-sharing service provider does not perform an act of communication to the public or an act of making available to the public when it gives the public access to copyright-protected works or other protected subject matter uploaded by its users"* [20].

There are some additional useful provisions regarding the differentiation of online content-sharing service provider's obligations, depending on their size and longevity, but also an important concretization that the provisions regarding the responsibility of an online content-sharing service provider shall not lead to any general monitoring obligation.

In the context of the above, we would like to notice that new business models and new actors continue to emerge. Relevant legislation needs to be future-proof so as not to restrict technological development and copyrighted content evolution.

Obviously, the main goal of IP regulations and law is to help the creators and owners to protect their IP assets, allowing them to benefit from their investments, on the one hand and the society and end users, on the other hand.

In this context we would like to mention that in the Republic of Moldova the law on copyrights and related right [21] was adopted in 2010 and it is largely outdated. Therefore, in our view, in order to keep the balance between the interest of the right holders and the final user of the copyrightable content, it is imperative to review the existing copyright system. One of the most urgent issues in this field is the compensatory remuneration system for private copying established in the Republic of Moldova, which are paid by individuals and legal entities that produce or import any equipment and material that can be used for reproduction providing for a payment of at least 3% of the amount collected from sale (resale) of equipment and material supports (art. 26 paragraph (6) letter b) of the Law no. 139/2010) to the collective management organizations.

In particular, it is necessary to establish new accounting tools, but also to review the amount of remuneration due, because with the evolution of communication platforms (YouTube, Spotify, Netflix, etc.) content consumers no longer use equipment for downloading content, also the platforms ensure remuneration of rights holders. Respectively, if a person uses his phone to listen to music, he is double charged for the authors' remuneration: once he buys the phone, because those fees applied to manufacturers / importers for each unit of equipment and media that can be used to make reproductions are reflected in the selling price of the phone, and the second, when paying the subscription for access to Spotify, Netflix, etc.

Another very important direction for improvement is the reform of collective management of the copyrights in order to increase the transparency and the equitability of

the collection and distribution systems, because there are many voices, especially among poets, composers, performers etc., asking for it. The main concern expressed by the authors is the proportions of the collected money distributed by Collective Management Organisations (CMO) to them. In this context, according to data provided by AGEPI, CMOs retains over 40% of the collected amounts of money for their selves [22] (Table 1).

Table 1

The activity of collective management organizations in figures

	2016	2017	2018	2019	2020
Nr. of members	117	132	179	457	474
Collected amount (lei)	3730296.61	8752366.58	11881931.41	16469495.94	15816519.93
Paid ammounts (lei):	1279402.0	3028187.85	6037792.48	9245399.56	8014787.94
Authors/phisical persons	177443.84 lei - 18 pers	1364712.85 lei - 68 pers	1948846.56 lei -93 pers	4697833.86 lei -231 pers.	3988219.94 lei -388 pers
Juridical persons	1101958.16 lei - 15 pers	1663475.0 lei - 6 pers	4088945.92 lei - 9 pers	4547565.7 lei - 7 pers	4026568 lei - 5 pers
Commission deducted from the collected amount	2147665.86 (57.57%)	3856863.41 (44.1%)	4167872.7 (35.1%)	6414564.01 (38.9%)	7033792.97 (44.47%)

Source: Elaborated by the authors based on [22].

But, at this chapter we shall rely on the international best practices according to which the management of the rights is realized by private entities not by the states and the role of the state shall be minimalized at this point.

There are many other directions for the improvement of the national regulatory framework in the field of copyright and related rights in the Republic of Moldova, thus the project of the new Law on copyrights submitted to the Parliament for adoption shall be considered after a careful consideration of the general public and professional's concerns.

In addition to the legal framework which determines what it is legal and what it is not, in the context of digital transformation of the economy, the management of information/data flows and the protection thereof shall be also considered.

The advancements in technologies, on the one hand, come to facilitate the innovation creation, but, on the other hand, make the creators more vulnerable, as it is exceedingly difficult to assure the IP protection in a world where everyone can access, share, and use the content without the authors' consent. The trends in the development of the modern technologies and their interference with IP protection are shaped by several issues:

1) Advancements in technologies and the development of World Wide Web, allow users to access, make use and publish information with only a click. Some authors believe that the World Wide Web creates a world of jurisdictional problems when it comes to digital intellectual property [23], as it has made possible the reproduction to be done at much lower costs for rights holders [24], but also has increased the frequency of copyright violations [25].

2) The development of World Wide Web allowed information products and digital assets not only to be easily reproduced, but also distributed with a high speed worldwide without almost no cost, also giving possibility to pirates to make use of unauthorized copies [26]. The process becomes uncontrollable with the development of social networks that have developed their business models on digital content sharing, which has made it impossible to monitor billions of pictures, videos and more distributed on these networks. In the digital era, advancements in technologies, on the one hand, come to facilitate the innovation creation, but, on the other hand, make the creators more vulnerable, as it is very difficult to assure the IP protection in a world where everyone can access, share and use the content without the authors' consent.

There are several types of technical protection mechanisms:

- Watermarking embeds information into a digital work (e.g., about right holder).
- Machine-readable languages enabling the computer to determine whether certain actions fall within a legal use.
- Encryption allows digital works to be codified so that they can be decodified only by legitimate users.
- Blockchain technologies and non-fungible tokens (NFTs) (e.g., about license agreements and the number of uses) suppose the sharing of data flows among the nodes of a computer network. According to [27] *"as a database, a blockchain stores information electronically in digital format. Blockchains are best known for their crucial role in cryptocurrency systems, such as Bitcoin, for maintaining a secure and decentralized record of transactions. The innovation with a blockchain is that it guarantees the fidelity and security of a record of data and generates trust without the need for a trusted third party"*.

3) Although these technologies are not widely used for IP protection yet, few instruments have been implemented to protect IP in certain fields with some success, for example, use of encryption in the entertainment industry (e.g., the encryption used in cable TV delivery). Or, the e-libraries, that allow users to download on their device the electronic version of a book, without having the possibility to copy parts of it or print it, and which is automatically deleted once the lend-out period expires. Despite being an efficient tool to protect IP rights in digital environment, Gulyaeva claims that it may also limit the fair use of copyrighted works (i.e. making a copy for personal use). [25]

Even though there are some success examples more efforts should be done in order to adjust the legal framework, inclusively by promoting the implementation of new Blockchain technologies and NFTs in ensuring the security of contractual relations and the traceability of the use of intellectual property rights.

Innovative technologies also impacted the communication, especially in the context of the Sars Cov-19 pandemic. To mention just the main shifts from the classic, by mail, to online or e-mail communication. In this respect, just to exemplify, we would mention the amendments introduced at international level in the Regulation [28] implementing the Madrid Protocol on the International Registration of Marks, as well as in the Hague Agreement Concerning the International Registration of Designs [29] on the obligation to indicate in international applications the e-mail address to be used exclusively in correspondence with the International Bureau of WIPO.

In the Republic of Moldova, by law no. 175 of 11.11.2021 for the amendment of some normative acts [30] amendments were made to the Administrative Code of the Republic of

Moldova, in particular Article 28 which provides that: Carrying out the administrative procedure by electronic means of communication is mandatory in all situations in which such means may be used, unless otherwise provided by law. Another meaningful change being the one referring to article 34 of Law no. 98/2012 on the specialized central public administration: In carrying out the administrative procedure, in the process of communication with the persons / institutions concerned and in the provision of services within the competence of the respective authorities, the central administrative authorities use electronic means of communication. Individual documents and documents are issued in the form of an electronic document, copies on paper being issued only at the request of the data subject, for archiving purposes or if required by law or international treaties. Administrative files are drawn up and kept, as a matter of priority, in electronic form.

These changes will be implemented by the central public authorities of the Republic of Moldova, within 6 months from the date of entry into force of the law publication. [29]

Regarding the management of information/data flows, it is worthy to mention that more and more online training services, online application submission services, classification, translation, formal examination, and image search assisted by artificial intelligence systems, are currently implemented by Governments in many jurisdictions etc.

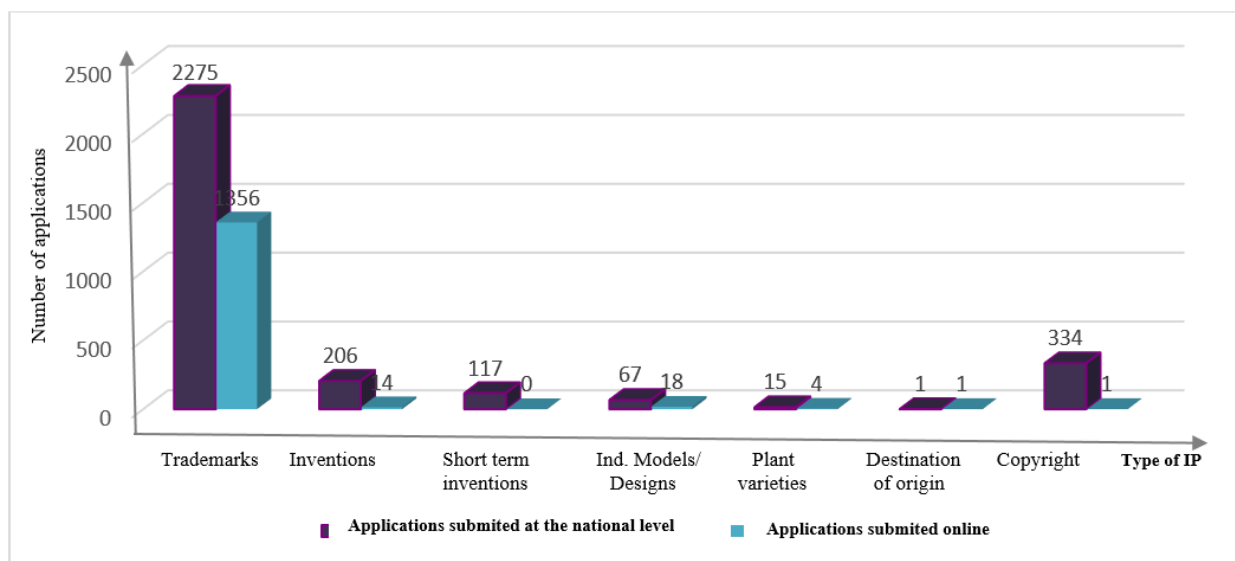


Figure 1. Distribution of submitted applications in the Republic of Moldova in 2021.

Source: [30].

Particularly, in order to facilitate access to data on intellectual property objects, the last decade has been marked by considerable efforts by organizations such as EUIPO and WIPO to create complex databases that include the national databases of several countries. These databases (GlobalBrand Database, GlobalDesign Database, E-Search, etc.) are important sources of information and provide customers with access to a multitude of data at a single point. The success of the online application submission platforms registered by both large international and national platforms is to mentioned as well.

For example, in the Republic of Moldova, after the implementation at the end of 2013 of the online application submission system, in less than 10 years, a share of approximately 80% of national applications has been submitted online (Figure 1).

4. Challenges of copyrights protection in the digital environment

Once digital environment allows individuals to access information and digital assets from all over the world, this turned out to making difficult to understand what is legal and what is not allowed. This is specific not only for a simple citizen, sometimes this being an issue for companies that do have lawyers in the field too. Therefore, the complex character of the current IP law represents a big challenge when it comes to shed the light upon legality of an action or pursuing a claim for unlicensed use of a right may be incredibly difficult [23]. Therefore, in the digital era the awareness of how to protect and valorize IP rights in the digital environments and **enforcement of IPR** protection became of crucial importance [32].

At this point we would like to underline the following challenges for the capitalization and enforcement of IPRs and particularly of copyrights:

1) **Different interpretation of legal concepts.** The complex character of the IP legislation and its continuous change to keep up with advancements in the nature and use of the new technologies open doors for different approaches in the interpretations of IP rights. The approach of “fair use” has attracted the attention of different researchers. “In its most general sense, a fair use is any copying of copyrighted material done for a limited and “transformative” purpose, such as to comment upon, criticize, or parody a copyrighted work” [33 - 35]. However, there are views on the notion of “fair use” interpreted as an affirmative right sanctioning copying in specific conditions, generally [26].

The difference matters, for both theoretical and pragmatic reasons. If fair use is an affirmative right, for instance, then it ought to be acceptable to take positive actions, such as circumventing content protection mechanisms (e.g., decoding an encrypted file), in order to exercise fair use. But taking such positive actions may well be illegal under the regime of fair use as a defense [26, p. 5].

Despite the controversies, legal scholars do not agree with the idea that fair use could be an affirmative right. Moreover, fair use and other copyright law exceptions derives from its fundamental objective. Even though the digital infrastructure changes the processes of fair use and other exceptions to copyrights are obtained, it does not summons the essential public policy motivations. Thereby, these concepts should continue to play a role in the digital environment [26, p. 11].

IP experts can have different interpretations on a particular case, especially when referring to digital property. A new division of IP law is shaped by the digital IP, which is trying to tackle the uncertainty and adjust the existing law to the digital era’s continuous updates and changes.

2) Another challenge identified is the of **jurisdictional nature**. If the content is disseminated via Internet in several countries, without the consent of the IPR holder, the IPR are violated in a number of countries. This applies not only to copyrights, but to the trademarks as well. Therefore, appears the questions - which is the court the right holder can seek protection? what is the course that has the jurisdiction to solve the case on IPR rights infringed on the Internet? [25]. The defendant periodically challenges the jurisdiction of the court in cases of IP rights infringement on the Internet. Thus, creating uniform harmonized approaches to jurisdictional issues would increase the effectiveness of IP protection and, therefore, provide a higher certainty for intellectual property rights holders. It is worth mentioning, in this context, WIPO's efforts to provide rights holders operating in a global economy with comprehensive dispute resolution solutions on the platform of the WIPO Mediation and Arbitration Center. However, the issue of jurisdiction is far from resolved and remains very sensitive.

3) **A wide variety of stakeholders** present a broad range of legitimate concerns about the impacts of information technology on copyrights capitalization and enforcement. As the concerns are different, it is important to analyze and determine them, as well as the impact of the technology on stakeholders. A relevant example is self-publishing on the Web, thus changing the interaction between authors and traditional publishers, subsequently evolving from positions previously dominated by authors and publishers to consumers, to libraries and educational institutions, to government and standards bodies. However, each stakeholder can sometimes have both similar and opposing concerns to those of other stakeholders. Also, a stakeholder may represent several roles based on different interests. A person may be an author, reader, consumer, teacher, or shareholder in publishing or entertainment companies; a member of an editorial board; or an officer of a scholarly society that relies on publishing for revenue, keeping in mind that the roles are interpreted at different times. Ultimately, the dominant concern depends entirely on the role being played at that time.

The amplification of copyright concerns as well as the increased stakes in terms of private and fair use is driven by the information infrastructure. One of the most contentious copyright issues is the legality of non-commercial private copying. Despite the fact that the issue is usable beyond the digital information sector, the risks are quite pervasive for rights holders when the information is in digital form. In this context, different opinions emerge, where some rights holders believe that most unauthorized reproductions are infringements, while many members of the general public believe that most private, non-commercial copies of copyright works are legal. The true legal status of private copying lies somewhere between these two extremes. Generally speaking, copyright relates to public documents such as public display and public performances. However, with the evolution of the information infrastructure, a greater influence on the market is exerted by private conduct (e.g. copying for personal use), whereas the distinction between public and private, as mentioned above, is blurred in the digital world. It is worth mentioning that technological progress does not only facilitate the copyrights' protection and capitalization, but, also, has a direct, negative impact on the copyrights infringement and it makes the process of proving that the infringement took place very difficult, thus making copyrights enforcement more complex. In the age of hyperconnectivity, copyright disputes and risks have become much greater. A rather relevant example is the litigation between technology giants in recent years, mainly over intellectual property, especially software patents. Google has been accused by Oracle, the owner of the Java programming language, of using Java SE code lines in Android, thereby violating copyright laws. They claimed \$9 billion in compensations. After 10 years of litigation, the US Supreme Court has put an end to these disputes, ruling that Google can legally use Java code snippets. The outcome of these disputes has set a significant precedent in the technology sector regarding copyright and how it affects software.

Taking into account the above, it can be said that intellectual property is most of the time analyzed from the perspective of law and technologies, in other words the law indicates what can be done legally, while technologies represent a certain degree of application on the ground. However, in our view there is a third factor that fits perfectly into this duo, and that is the business model.

A rights holder can sometimes radically influence the pressure and degree of illegal commercial copying and unauthorized reproduction by individuals. Among the many business models that can support intellectual property protection are traditional sales models (mass market distribution at a reduced price with convenient purchase, where the low price and the

way of buying become more attractive than copying itself) and advertising-supported models (keeping the price of the product low by selling to the reader), as well as the absolute move of offering IP and selling an additional product and/or service (e.g. offering open source software together with consulting and maintenance services). Due to the fact that digital content is very complicated to protect, there is an opportunity to develop a profitable business model that is not only based on technical protection and/or valorizing content sharing and redistribution trends.

5. Conclusions

As it is well known, in today's society the prevailing thinking is that copying for personal use is always or almost always legal. However, it is quite difficult to support this view from an ethical and legal perspective. It is relevant to find and/ or develop different tools and methods to get the general public to investigate the legality, ethics, and economic implications of private copying. Fair use as well as other exceptions to copyright law result from the fundamental purpose of copyright law and the simultaneous balancing of competing interests among stakeholder groups. Despite the fact that the evolution of the information infrastructure transforms the processes by which fair use and other exceptions to copyright are achieved, it does not challenge the underlying public policy motivations. Fair use and other exceptions to copyright law should therefore continue to play a role in the digital environment.

Despite the several challenges, technological progress produces different technical solutions to create an equilibrium between the interests of copyright holders and users of intellectual property. However, more efforts should be done in order to adjust the legal framework, inclusively by promoting the implementation of innovative technologies in ensuring the security of contractual relations and the traceability of the use of intellectual property rights.

As already mentioned, law and technology are not the only available tools for the use of copyright in the digital age. The pressure and degree of illegal commercial copying and unauthorized reproduction by individuals and the degree of unauthorized reproduction by individuals can be greatly influenced by innovative business models.

Achieving a workable balance between private rights and the public interest in information will require considerable effort and time, which will allow intellectual property to withstand the digital age. In order to ensure that content creators and rights holders have sufficient incentives to a broad and diverse supply of intellectual property, major adaptations will be needed. To confirm that the important public objectives embodied in copyright law continue to be met in the digital context, policy makers and stakeholders will need to work together. Access to information for the whole population, as promised by the information infrastructure, will be strengthened. We, as a society, have the responsibility to develop rational settlements with the aim of enabling the nation to benefit from all the opportunities it can bring.

Acknowledgement. This paper is elaborated in the framework of the Jean Monnet Support to Associations in European Integration and Intellectual Property Protection Studies / EUPROIN, nr. ref. 611344-EPP-1-2019-1-MDEPPJMO-SUPPA, implemented with financial support of the Erasmus+ programme of the European Union.

“The European Commission's support for the production of this publication does not constitute an endorsement of the contents, which reflect the views only of the authors, and the

Commission cannot be held responsible for any use which may be made of the information contained therein”.

Conflicts of Interest. The authors declare no conflict of interest.

References

1. WIPO. *World Intellectual Property Report 2022. The Direction of Innovation*. Available online: <https://www.wipo.int/publications/en/details.jsp?id=4594&plang=EN> (accessed on 27.04.2022).
2. Iglesias, P.M.; Shamuilia, S.; Anderberg, A. *Intellectual Property and Artificial Intelligence - A literature review*, Publications Office of the European Union, Luxembourg, 2021. DOI:10.2760/8600.
3. World Economic Forum. *Fourth Industrial Revolution*. Available online: <https://www.weforum.org/focus/fourth-industrial-revolution> (accessed on 20.04.2022)
4. EU Commission. *Trends and Developments in Artificial Intelligence- Challenges to the Intellectual Property Rights Framework*. 25 November 2020. Available online: <https://digital-strategy.ec.europa.eu/en/library/trends-and-developments-artificial-intelligence-challenges-intellectual-property-rights-framework> (accessed on 24.04.2022).
5. Bonadio, E.; McDonagh, L. Artificial Intelligence as Producer and Consumer of Copyright Works: Evaluating the Consequences of Algorithmic Creativity. *Intellectual Property Quarterly* 2020, 2, pp. 112-137.
6. Abbott, R.B. *Artificial Intelligence, Big Data and Intellectual Property: Protecting Computer-Generated Works in the United Kingdom*. Research Handbook on Intellectual Property and Digital Technologies; Tanya Aplin, ed; Edward Elgar Publishing Ltd: 2017. Available online: <https://ssrn.com/abstract=3064213> (accessed on 20.04.2022)
7. Gurry, F. *Artificial intelligence and intellectual property: an interview with Francis Gurry / Interviewer: W. Magazine, WIPO, Geneva, 2018*.
8. Javiera, C.B.; Munoz, N.F. Artificial intelligence: a new Frontier for Intellectual property policymaking. *Journal of intellectual property law and management* 2020, 9(2), pp. 108-131. Available online: <https://repositorio.uchile.cl/bitstream/handle/2250/180814/Artificial-Intelligence.pdf?sequence=1&isAllowed=y> (accessed on 22.04.2022).
9. Boshier, H.; Gurgula, O.; Stokes, S.; Wang, F.; Westenberger, P. *WIPO Impact of Artificial Intelligence on IP Policy Response from Brunel University London, Law School & Centre for Artificial Intelligence*. Available at: https://www.wipo.int/export/sites/www/about-ip/en/artificial_intelligence/call_for_comments/pdf/org_brunel.pdf (accessed on 21.04.2022).
10. Thurow, L.C. *Needed: A New System of Intellectual Property Rights*, 1997. Available online: <https://hbr.org/1997/09/needed-a-new-system-of-intellectual-property-rights> (Accessed on 11 April 2022).
11. Mihaiescu, M. *Partidul Piratilor: Cine este si ce isi propune*, 2009. Available online: <https://www.hotnews.ro/stiri-international-5805118-partidul-piratilor-cine-este-isi-propune.htm> (Accessed on 20 April 2022).
12. Deloitte. *Protecting intellectual property rights Challenges, opportunities, and solutions*. June 2017. Available online: <https://www2.deloitte.com/content/dam/Deloitte/us/Documents/public-sector/us-fed-protecting-intellectual-property-rights.pdf> (Accessed on 11 May 2022).
13. Law on trademarks protection no. 38-XVI (adopted on 29.02.2008, applied since 06.09.2008).
14. Law on industrial designs protection no. 161-XVI (adopted on 12.07.2007, applied since 01.12.2007).
15. Law on patent protection no. 50-XVI (adopted on 07.03.2008, applied since 04.10.2008).
16. Berne Convention for the Protection of Literary and Artistic Works (adopted in 1886). Available online: <https://www.wipo.int/treaties/en/ip/berne/#:~:text=The%20Berne%20Convention%2C%20adopted%20in,wom%2C%20and%20on%20what%20terms.> (Accessed on 11 July 2022).
17. WTO. Intellectual property (TRIPS) - agreement text - contents (2022). Available at: https://www.wto.org/english/docs_e/legal_e/27-trips_01_e.htm (Accessed: 7 June 2022).
18. Beijing Treaty on Audiovisual Performances (adopted on June 24, 2012). Available at: <https://www.wipo.int/treaties/en/ip/beijing/> (Accessed on 11 June 2022).
19. Directive (EU) 2019/790 of the European Parliament and of the Council of 17 April 2019 on copyright and related rights in the Digital Single Market and amending Directives 96/9/EC and 2001/29/EC. Available online: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019L0790&from=EN>
20. CURIA - Case information. Available online: <https://curia.europa.eu/juris/fiche.jsf?oqp=&for=&mat=or&lgrec=ro&jge=&td=%3BALL&jur=C%2CT%2CF&id=C%3B682%3B18%3BRP%3B1%3BP%3B1%3BC2018%2F0682%2FJ&dates=&pcs=Oor&lg=&parties=youtube&pro=&nat=or&cit=none%252CC%252CCJ%252CR%252CC>

- 252C2008E%252C%252C%252C%252C%252C%252C%252C%252C%252Ctrue%252Cfalse%252Cfalse
&language=en&avg=&cid=2683574#section_titre (Accessed: 11 July 2022).
21. Law on Copyright and Related Rights No. 139 of 07.02.2010. Official Monitor (OM) No.191-193/630 of 10.01.2010. Available online: https://agepi.gov.md/sites/default/files/law/national/l_139_2010-en.pdf (accessed on 22.04.2022).
 22. Bizlaw. *Activitatea organizațiilor de gestiune colectivă. Câți bani încasează și ce comisioane au*. Available at: <https://www.bizlaw.md/activitatea-organizatiilor-de-gestiune-colectiva-cati-bani-incaseaza-si-ce-comisioane-au> (Accessed on 11 July 2022).
 23. Muir, J. *Digital Intellectual Property Rights*. J. Muir & Associates, J. Muir & Associates. Available at: <https://jmuirandassociates.com/digital-intellectual-property-rights/> (Accessed on 11 April 2022).
 24. Chattopadhyay, S. Intellectual Property Rights in Digital Environment. *National Conference on Reprographic Rights and Copyright Act: Challenges and Management*, Indian Statistical Institute, Kolkata. [Conference paper] (2013, 7-8 March). Available at: http://eprints.rclis.org/28939/1/Intellectual%20Property%20Rights%20in%20Digital%20Environment_ISI.pdf (accessed on 30 September 2021)
 25. Gulyaeva, N. *Intellectual Property Law in the Digital Society: Challenges and Opportunities*. Expert Guides. Retrieved 30 September 2021, from <https://www.expertguides.com/articles/intellectual-property-law-in-the-digital-society-challenges-and-opportunities/ARCPWTMM> (Accessed on 12 April 2022).
 26. National Research Council. *The Digital Dilemma: Intellectual Property in the Information Age*. Washington, DC: The National Academies Press, 2000. Available at: <https://doi.org/10.17226/9601>
 27. *Tokenised assets exchange* (2022). Available at: <https://currency.com/> (Accessed: 18 May 2022).
 28. WIPO. *Protocol Relating to the Madrid Agreement Concerning the International Registration of Marks* (2022). Available at: https://www.wipo.int/treaties/en/registration/madrid_protocol/#:~:text=WIPO%2DAdministered%20Treaties-,Protocol%20Relating%20to%20the%20Madrid%20Agreement%20Concerning%20the%20International%20Registration,that%20Agreement%2C%20concluded%20in%201989. (Accessed: 18 May 2022).
 29. WIPO. *Common Regulation on the application of the 1999 Act and the 1960 Act of the Hague Agreement Concerning the International Registration of Designs*. Available at: https://www.wipo.int/export/sites/www/hague/en/legal_texts/hague_system_regulations.pdf (Accessed: 26 May 2022).
 30. Law no. 175 of 11.11.2021 for the modification of some normative acts (published: 10.12.2021 in the Official Gazette No. 302-306 art. 431)
 31. Agenția de stat pentru proprietatea intelectuală. Available at: <https://agepi.gov.md/ro/statistica/m%C4%83rci-statistica> (Accessed on 10 June 2022).
 32. *Enforcing IP rights in a digital environment* (2020). Available at: <https://www.businessgoing.digital/enforcing-ip-rights-in-a-digital-environment/> (Accessed: 11 July 2022).
 33. Lehman, B. *Final Report to the Commissioner on the Conclusion of the Conference on Fair Use*. Washington, DC: U.S. Patent and Trademark Office, 1998.
 34. Stim, R. *What Is Fair Use?* Stanford Copyright and Fair Use Center (2013). Available at: <https://fairuse.stanford.edu/overview/fair-use/what-is-fair-use/> (Accessed: 11 July 2022).
 35. O'Rourke, M. A. Toward a Doctrine of Fair Use in Patent Law. *Columbia Law Review* 2000, 100 (5), pp. 1177–1250. <https://doi.org/10.2307/1123488>.

Citation: Mogol, N.; Crudu, R. Challenges and strategies for copyright protection in the digital era. *Journal of Social Sciences* 2022, 5(4), pp. 6-19. [https://doi.org/10.52326/jss.utm.2022.5\(4\).01](https://doi.org/10.52326/jss.utm.2022.5(4).01).

Publisher's Note: JES stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



Copyright: © 2022 by the authors. Submitted for possible open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

Submission of manuscripts: jes@meridian.utm.md