INTELLECTUAL PROPERTY RIGHTS AND THE DIGITAL ECONOMY: CHALLENGES, OPPORTUNITIES AND THE FUTURE OF DIGITAL INNOVATION

Anushka Rai*

ABSTRACT

Digital Technologies changed how we create, share, and sell innovations & Info. Innovations driven by Techno. (e.g., AI, Blockchain, Cloud Computing & E-Commerce) have led to finding new ways to make money; however, they have also created numerous challenges related to Intellectual Property Rights (e.g., copyright infringement, trademark infringement, software piracy, cybersquatting). Among other things, there are complicated legal ownership issues surrounding Engendering forms of AI (who owns? Who is the author? Who is accountable for the creation of works that are created digitally? The impact of new technologies introduces uncertainty regarding how Courts resolve conflicting cases and/or conflicting sources of law affecting these cases. Intellectual Property Rights are an important mechanism for promoting innovation, protecting creators and inventors, and ensuring fair competition in the marketplace. The digital economy has created new challenges for the effectiveness of intellectual property protection and necessitated that legal systems evolve with technology and international digital activities. Many of the current domestic and international legal frameworks have not kept pace with technological changes and therefore have difficulty addressing the issues resulting from digital transactions that cross borders and the rapid pace of technological change. The purpose of this research paper is to provide an overview of how Intellectual Property Rights (IPRs) intersect with the digital economy by reviewing the applicable laws, identifying the challenges posed by the rise of digital infringement, exploring the effect of new technologies on the development of IPRs, and analysing how courts are responding to these issues. The paper also proposes possible reforms that would help

*BBA LLB, FOURTH YEAR, NOIDA INTERNATIONAL UNIVERSITY.

strengthen IPRs while still supporting innovation and encouraging the public good and the progression of new technologies.

Keywords: Intellectual Property Rights, Digital Economy, Copyrights, Patents, Trademarks.

INTRODUCTION

The economy of the twenty-first century has been changed forever by a new form of business called the “Digital Economy." Companies use digital technology for many different purposes - from how they do business, to how people interact with one another, and how we share information over the Internet. More and more, as people become connected via the Internet, are using Artificial Intelligence, or Cloud Computing, or have a Blockchain, or are utilising Digital Platforms, this creates a whole new world of possibilities for innovation, new businesses created by entrepreneurs, and for economic growth across the globe! In fact, the Digital Economy has become one of the primary engines fueling the overall economy and creating new markets across borders.[1]

In today’s economy, intellectual property (IP) has become one of the most important resources. The value of IP comes from creativity, innovation, knowledge, and improvements to technology; whereas other forms of economic resources (e.g. natural resources, human resources) are based on physical assets. Copyright law protects creative works (e.g. artwork, writings, and electronic files); patent law protects inventions in technological fields; trademark law protects brands (e.g. identifying a product); and trade secret law protects a company’s confidential information. These rights create the basis for a knowledge-based economy where innovation is rewarded and where R&D investments are encouraged.[2]

The combination of digital technologies and intellectual property has created both possibilities and challenges. Digital technologies allow for the quick spread of creative works, promote collaboration, and allow inventors to reach global markets. However, the use of digital technologies has made intellectual property more vulnerable to being copied and used without permission. Digital piracy, online counterfeiting, content sharing without authorisation,

---

[1] Don Tapscott, *The Digital Economy: Promise and Peril in the Age of Networked Intelligence* (McGraw-Hill 1996).
[2] Robert P Merges, Peter S Menell and Mark A Lemley, *Intellectual Property in the New Technological Age* (7th edn, Wolters Kluwer 2017).

software infringement, and cybersquatting are some of the types of problems that affect all parties involved (creators, businesses, and government).

The emergence of new technologies is creating a more complex intellectual property environment. For example, AI systems can now create literary works, artistic works, computer software, and even invent things that challenge traditional theories of authorship and who owns them. Furthermore, blockchain technology and non-fungible tokens (NFTs) provide new ways to commercialise and protect digital assets, while creating many new legal or regulatory challenges.[3] There needs to be a re-examination of the current intellectual property laws to ensure that they continue to serve their purpose in our current digital world.

Research Problem: Even though there are established IP systems on both national and global scales, the digital economy provides unique difficulties for which conventional IP law does not have a proper framework. The borderless character of digital transactions results in challenges to following the law due to difficulties in enforcing; furthermore, developments in advance of technology often surpass those in legislation. Questions regarding ownership for AI-generated works, liability for digital intermediaries, safeguarding of digital property, and enforcing IP across jurisdictional lines are still largely unanswered.

Because current legal systems cannot manage those challenges appropriately, there has been an increase in violations and confusion. Therefore, we need to assess whether the current intellectual property laws are able to properly regulate the digital economy and safeguard the rights of creators, innovators, companies and consumers.

RESEARCH QUESTIONS

1. What role are Intellectual Property Rights playing in today's digital economy?
2. How do current domestic and international legal frameworks regulate IP content restrictions (i.e., copyright, patent law) on the Internet?
3. What major challenges do emerging digital technologies contribute to intellectual property protection?
4. How have courts and regulatory agencies addressed disputes related to digital intellectual property?

[3] WIPO, *WIPO Technology Trends 2025: Artificial Intelligence* (WIPO 2025).

5. What types of reform are critical to sustain effective levels of intellectual property protection in the emerging digital economy?

OBJECTIVES OF THE STUDY

The main objective of the study is to:

- Identify how IP (otherwise known as Intellectual Property Rights) operates and its significance with respect to a digital economy.
- Critically evaluate both domestic and international legal mechanisms used to protect IP.
- Identify any issues related to the technological development and innovation occurring digitally, with respect to the development and advancement of technologies and innovations.
- Assess differing judicial approaches to resolving IP disputes as they pertain to the digital environment.
- Identify recommendations for changes in laws and policies to help improve the protection of IPs within the digital economy.

RESEARCH METHODOLOGY

The research method of this article is both doctrinal and analytical. Secondary sources consisting chiefly of statutes, treaties, court decisions, journals, books, government reports and policy documents have been used in the study. The researcher has used a comparative approach in order to compare developments in different jurisdictions and identify sound practices relating to how intellectual property is regulated throughout the digital era. This article also seeks to identify and provide a greater understanding for the reader in respect of the legal principles involved, as well as how modern technology will impact intellectual property in the digital era.

SCOPE AND LIMITATIONS OF THE STUDY

This project will provide an overview of various types of IP, such as copyrights, patents, trademarks, and trade secrets, as they exist in today's digital economy. It also provides a thorough analysis of how digital technology (AI, blockchain, cloud computing, etc.) now affects how IP rights are protected. Last but not least, it will evaluate existing international agreements and Indian law in relation to IP protection.

The research will be limited to a thorough study of laws and policies related to digital intellectual property infringement and will not collect any qualitative or empirical evidence or provide any numeric assessments of such violations. Additionally, the study cannot anticipate how technology will continue to evolve and how technologies being developed right now may evolve, creating an impact on this research project that is not yet known.

CONCEPTUAL FRAMEWORK OF THE INTELLECTUAL PROPERTY RIGHTS AND THE DIGITAL ECONOMY

Meaning and Evolution of Intellectual Property Rights: Intellectual Property Rights (IPR) are the legal protections provided to an individual or an organisation for a creation of the mind, including an invention, a work of literature or art, a design, or any trademark or logo associated with that creation. A creator has exclusive rights over how to use, reproduce and sell an intellectual property creation for a limited time. The main purpose of IPR is to provide rewards to a creator in order to encourage creativity, innovation, and economic development, which can be done through investing time and resources into developing their intellectual property.[4]

Intellectual property rights have changed throughout history. In ancient times, there were generally no legal protections for authors/inventors. When the printing press was invented in the 15th century, theft of authorship became easier than ever before, and the need for some kind of protection became obvious. This is when we saw the emergence of copyright and patent law; this was due in large part to the Statute of Anne, which is one of the earliest modern copyright laws. There are also apparatuses of patent systems created to spur innovation by granting exclusive rights (for a preset time) to the creator of the innovation.[5]

Globalisation and rapid technological progress are making intellectual property (IP) one of the most valuable assets in the global economy. The transition from a traditional economy to one that is knowledge-based and digital means that the definition of IP has been broadened beyond traditional forms of intellectual property; the definition now includes software, databases, digital video content and sound, trademarks, and some AI innovations. As technology continues to evolve through the use of digital technology, IP will assist in providing a balance

[4] Peter Drahos, *A Philosophy of Intellectual Property* (Dartmouth Publishing 1996).
[5] Statute of Anne 1710 (UK).

between the interests of creators, businesses, and society as it relates to innovation and technological advancement.[6]

The expansion of technology and the internet has significantly altered how creative works (e.g., films, songs) are created and accessed; however, while this promotes inventiveness, it also creates additional opportunities for digital infringement on the creator's rights, requiring changes to the legal framework surrounding intellectual property to be created by the digital revolution. Intellectual property (IP) rights will be critical to the success of all businesses operating within the digital economy, as they represent one of the most valuable assets a creator can have to protect their creation from potential competitors, assist creators in developing their sales strategies, maintain their competitive advantage and support further innovation through technological advancements.

TYPES OF INTELLECTUAL PROPERTY RIGHTS

Copyright: Copyright by definition is a right to legally protect original works of writing, art, music and/or digitally created material. Authorised copyright gives authors/exclusive right to copy, distribute and communicate the copyright in their respective works. In addition, copyright is critical in today's digital world (through which the Internet provides access to an extensive range of creative works) to IP rights-infringement-type protections for online content (e.g., software, movies, music) as well as for digital books.

Patent: A patent is a means by which a new invention obtains protection, if, as its name implies, the new invention is novel, has an inventive step and has industrial applicability. A patented invention affords the inventor/exclusive rights to his/her invention for a limited time frame; this is to encourage research and development (and consequently the development of technological innovation).

Trademarks: Trademarks are unique symbols /signs/indications that serve to identify the source of goods/services. They help companies create a branded identity for their business and also help to protect consumers from being misled/confused as to the source of goods and/or services. Increasingly, the growth of digital markets has heightened the need for companies to protect trade marks from online infringement and cybersquatting.

[6] Daniel J Gervais, 'The Machine as Author' (2020) 105 Iowa Law Review 2053.

Trade Secrets: Trade secrets are any confidential business information, such as formulae, algorithms, customer lists, and business strategies. Protection of such information is reliant upon keeping it secret so that businesses can enjoy an advantage over their competitors.

Industrial designs and Geographical Indications: Industrial Designs provide protection against the appearance of a product, and geographical indications (GIs) represent the commercially valued characteristic of a commodity that is specific to a particular region or area. Both types of IP contribute to a product's value and recognition within the digital economy.

Understanding the Digital Economy: The digital economy encompasses the economic system, ultimately based on digital technology, which includes the use of the Internet and information networks as the basis of economic connections. The digital economy consists of the way that we create, deliver and buy and sell products and services through a variety of digital channels and technology platforms. The digital economy relies on internet-based systems and processes, while traditional economies have relied heavily on physical resources for economic production, delivery and consumption. The digital economy is built on data, innovation, automation and connectedness rather than the physical resources that drive traditional economies.[7]

Quickly improving technologies, which include the internet, AI, cloud services, mobile phones and digital payment systems, have led to rapid advancement in digital economies. Businesses are now operated worldwide due to these advancements, allowing consumers more access to be able to purchase products and/or services. There have also been many new opportunities for innovation and creating new businesses.

Although the digital economy is contributing towards growing economies, it also offers legal issues such as protecting intellectual property, protecting data from being hacked, creating cybersecurity systems and finally establishing rules for governing digital devices.

THEORETICAL FOUNDATIONS OF INTELLECTUAL PROPERTY PROTECTION

There are many justifications for and explanations of the importance of IP rights in today's economy.

[7] OECD, *Digital Economy Outlook 2024* (OECD Publishing 2024).

Labour Theory: John Locke's Labour Theory states that individuals develop property rights to the outcome of their labour. If an individual creates a piece of creative or intellectual property by investing in skill, effort or creativity, then they are entitled to legal protection and ownership of that creation.[8]

Utilitarian Theory: The Utilitarian Theory posits that intellectual property rights (IPR) provide a greater benefit to society as a whole than would otherwise exist. Each time a creator is granted exclusive rights to his/her creation, it provides a stronger incentive for the creator to create, thereby fostering innovation, creativity, and technological advancements, all to the public's advantage.[9]

Positive Incentive Theory: Incentive Theory states that both creators and inventors need some type of financial remuneration for their efforts. Through the mechanism of providing financial remuneration (economic reward), IP (Intellectual Property) rights encourage individuals and other business entities to invest in the research, development and/or creation of goods.

Economic Theory: Economic Theory views IP as a commercial asset of value and therefore provides support for the development of infrastructure, investment, and technology transfer, market competition, and overall economic development through the establishment of Intellectual Property Rights (IPR) and strong protection of those rights, especially in an information-based or digital economy.

INTERSECTION BETWEEN INTELLECTUAL PROPERTY RIGHTS AND THE DIGITAL ECONOMY

Innovation, creativity and technology are the main components that drive the growth of the digital economy, and they all rely on having your intellectual property protected effectively. Intellectual property rights offer security to creators, companies, and investors who are working in the digital environment. Intellectual property rights support how digital items such as software, online content, and technological devices can be commercialised and will also help to avoid the unauthorised use and infringement of intellectual property.

[8] John Locke, *Two Treatises of Government* (Cambridge University Press 1988).
[9] William M Landes and Richard A Posner, *The Economic Structure of Intellectual Property Law* (Harvard University Press 2003).

Digital technology has changed the way intellectual property is developed, used, distributed and protected, through a change in the way that the Internet allows for the sharing of creative works globally; however, the Internet also creates greater risks of piracy, counterfeiting and copying without permission. Therefore, there is a strong connection between intellectual property rights and the digital economy, and this partnership between the two is dependent on continuous innovation to be protected, and the required protection must evolve with changes in technology.[10]

INDIAN LEGAL FRAMEWORK GOVERNING INTELLECTUAL PROPERTY RIGHTS

An effective legal structure for safeguarding and enforcing intellectual property rights has been put into place in India. The increase in the digital economy has heightened the importance of these laws as they provide security for innovations, creativity, and business interests while responding to the challenges created by technological advancements. The structure of the intellectual property system of India is affected by worldwide treaties, including the TRIPS Agreement, and its goal is to develop a balance between the respective interests of creators, businesses, and the general public.

Copyright Act 1957: The foundation of copyright in the United Kingdom rests in the Copyright Act 1988, which is the main legislation governing copyright in the UK for all forms of copyrightable work, including literary works, dramatic works, musical works, artistic works, and films (together with any sound recordings). The creator of a work is granted copyright, including the exclusive right to reproduce (print, copy), distribute (sell), publicly perform or adapt (create derivative works of) that work.[11]

In 2012, the Copyright (Amendment) Act 2012 made significant reforms to the Copyright (Amendment) Act through the introduction of provisions that provided for the management of digital rights, the protection provided against the use of technical measures, and for authors' rights when they create and distribute their works in a digital environment. This legislation is particularly significant in the fight against online piracy and the unlicensed/unlawful use of content distributed via electronic channels, such as the Internet.[12]

[10] WIPO, *World Intellectual Property Report 2024* (WIPO 2024).
[11] Copyright Act 1957, ss 13–14.
[12] Copyright (Amendment) Act 2012.

Patents Act, 1970: India's Patents Law of 1970 provides rules regarding the awarding and safeguarding of patents. A patent may be granted for a new invention, has an innovative idea and can be used in manufacturing or other industrial activities. The existence of patent protection fosters the growth of invention by providing an inventor with exclusive ownership of the invention for a specified period.[13] Within the new economy (the digital economy), patents have particular importance in the area of invention and development of technology-related inventions, software-related inventions, telecommunications and artificial intelligence. The Patents Act encourages both research and development, but also ensures that developments in technology support both the economy and the social good.[14]

Trademarks Act, 1999: The 1999 Trade Marks Act was created to help protect the trademark, service mark and brand identity of goods, as well as to provide business protection against confusion or deception from competition between businesses. As e-commerce and digital marketing continue increasing, there is more need for trademarks because of the increased levels of cybersquatting, domain name disputes, online counterfeiting, and misuse of trademarks in the electronic environment. These Issues illustrate that the effective registration and regulation of trademarks are essential components in the online marketplace.[15]

Information Technology Act, 2000: The IT Act offers electronic records and online transactions legal recognition in India. Although it isn't an Intellectual Property statute, it still has a significant impact on regulating Internet activity and addressing cybercrime. The Act specifically addresses unauthorised access to computer systems, theft of data, cyber fraud, and intermediaries' liability. By protecting against certain forms of digital rights infringement and cyber misconduct, those provisions indirectly contribute to IP protection.[16]

Digital Personal Data Protection Act, 2023: The Digital Personal Data Protection Act of the year 2023 lays down the framework involved in the collection, processing and safeguarding of personal data in India. Unlike the Act itself, which is primarily about privacy and data protection, the legislation actually has a strong connection with the digital economy, which creates a positive impact for businesses, as the value of data has become an important commodity.[17]

[13] Patents Act 1970, s 2(1)(j).
[14] Shamnad Basheer, *Patent Law in India* (OUP 2012).
[15] Trade Marks Act 1999.
[16] Information Technology Act 2000.
[17] Digital Personal Data Protection Act 2023.

The overall intent of the Act is to promote responsible data governance and promote trust in the digital ecosystem through proper regulation of the collection and use of personal information. Therefore, the Act will provide a level of confidence that will allow for innovation in technology and provide businesses with the security to operate within the rules of data protection.

EMERGING CHALLENGES TO INTELLECTUAL PROPERTY RIGHTS IN THE DIGITAL ECONOMY

Digital technology is rapidly expanding, creating many opportunities for innovation and economic growth. However, it has also created significant challenges related to the protection and enforcement of intellectual property rights. Existing legal frameworks often do not keep pace with new challenges resulting from the fast-evolving, borderless nature of the digital environment.

Digital Piracy and Copyright Infringement: Piracy is still a huge concern to those who own Intellectual property rights. Piracy is enabled by the internet through unauthorised copying, distribution and sharing of copyrighted works like music, movies, software, e-books, etc. These piracy methods are causing companies to suffer significant losses and discouraging future innovation and creativity.[18]

Artificial Intelligence and Ownership of Creative Works: The emergence of Artificial Intelligence has revolutionised how content is created today. Some examples of AI-generated creative works include text, images, musical compositions, and software, all produced by an AI system without any input or oversight from a human being.[19] As a result, many legal issues surrounding the authorship/ownership/liability of creative works created using new technology are being raised for consideration by lawyers and courts alike. Most established intellectual property laws only recognise human creators, which adds to the complexity surrounding who owns any creative work produced using AI technology.[20]

Protection of Software and Algorithms: The digital economy relies strongly on software and algorithms as the base for its operation. Nevertheless, there is still a lack of clarity when it comes to what type of legal protection is appropriate for these types of products. For example,

---

[18] OECD and EUIPO, *Trends in Trade in Counterfeit and Pirated Goods* (2021).
[19] Andres Guadamuz, 'Artificial Intelligence and Copyright' (2017) 41 WIPO Magazine 14.
[20] Ryan Abbott, *The Reasonable Robot: Artificial Intelligence and the Law* (Cambridge University Press 2020).

while software is generally considered to be protected under copyright law, software-related inventions can often be a source of controversy regarding patent protection due to their impact on innovation and competition.[21]

Online Trademark Infringement and Cybersquatting: Due to the growing popularity of e-Commerce (and best-practice online businesses), the number of cases of misuse of trademarks has also increased. Examples of Trademark misuse include Cybersquatting (using the registered domain names of other well-known trademarks), which can mislead consumers and damage the brand's reputation. Additionally, the unintentional/unauthorised use of trademarks, on websites and social media platforms (for example, Facebook, Instagram has added even more difficulty in trying to enforce trademark rights.[22]

Counterfeit Goods on E-Commerce Platforms: The sale of counterfeit products has been made much easier with the help of online marketplaces, and the problem with fake products is that they infringe upon the rights of legitimate businesses and also harm consumers who purchase them. The problem lies with the monitoring and removal of infringing goods from digital platforms, which is quite challenging.

Big Data and Ownership Issues: In this digital era, data can be considered an economic resource; however, questions regarding ownership, control and commercial use of data are still not clearly defined. Many companies are now using data-based models to guide their decisions. This means there is sometimes a greater concern for protecting companies' intellectual property rights related to proprietary databases and information than ever before.

Blockchain, NFTs, and Digital Assets: Blockchain technology has created new opportunities for creating, selling, and transferring all types of digital assets. NFTs also provide an avenue for protecting your intellectual property via blockchain; however, these technologies currently pose challenges regarding ownership verification, infringement, and regulatory oversight.[23]

Cross-Border Enforcement Challenges: Many times, digital operations take place in many different locations at one time, making it ever more difficult to enforce intellectual property. In many countries, there are different laws regarding intellectual property, leading to problems

---

[21] Pamela Samuelson, 'Why Patent Protection for Software is Problematic' (2004) 17 Berkeley Technology Law Journal 1.
[22] Yahoo! Inc v Akash Arora (1999) 19 PTC 201 (Del).
[23] Primavera De Filippi and Aaron Wright, *Blockchain and the Law* (Harvard University Press 2018).

with jurisdictional enforcement and providing effective remedies against infringement on different types of digital media.[24]

LANDMARK CASES AND REACTIONS FROM THE LEGAL SYSTEM

As a significant part of the implementation and interpretation of intellectual property laws in today's electronic economy, courts worldwide, including those in India, have taken action to investigate various issues associated with digital content, including online infringement, trademarks, and other types of innovation. To demonstrate how judiciaries have developed their interpretations of intellectual property protection in our digital economy over recent years, we outline below 6 landmark decisions made by courts and their reactions to reduce the number of cases of infringement of intellectual property.

Yahoo! Inc. v. Akash Arora (1999): In a landmark trademark case, the Delhi High Court decided that a company's domain name (yahooinida.com) was so similar to the trademark (Yahoo!) possessed by another company that the two companies were competing against each other for customers, with confused customers. The court further defined unauthorised usage of another party's trademark as trademark infringement and passing off. The decision set a precedent for the level of protection that an online trademark has in India.[25]

Super Cassettes Industries Ltd v MySpace Inc (2011): The case was about alleged breaches of copyright by one online platform that allowed users to upload their own content. As both sides were concerned with the same musical works that were uploaded and shared without consent, the Delhi High Court held that all digital intermediaries must take down infringing material when given proper notice. The importance of a fair balance between protecting copyright and the functioning of digital platforms was addressed in this case.[26]

The Union of India v. Novartis AG (2013): Patent law case that has larger implications for innovation and IP protection. The Supreme Court of India rejected Novartis' patent application for a new version of a pharmaceutical product based on a failure to demonstrate that the product had any significant improvement in therapeutic efficacy, continued to promote genuine

[24] Agreement on Trade-Related Aspects of Intellectual Property Rights 1994.
[25] *Yahoo! Inc v Akash Arora* (n 22).
[26] Super Cassettes Industries Ltd v MySpace Inc 2011 (48) PTC 49 (Del).

innovations through Patent protection, while preventing monopolistic control of minor modifications to existing inventions.[27]

REFORMING INTELLECTUAL PROPERTY LAW FOR THE DIGITAL AGE

The rapid development of digital technology means that the law concerning intellectual property must continuously evolve. The evolution of existing intellectual property law must combine to address new issues while also balancing the innovative process against the public good.

Improving Digital Copyright Enforcement: There needs to be an improved legal system for combating online piracy and unauthorised distribution of copyrighted works created by creators. Properly designed notice-and-takedown systems, along with an effective digital rights management process, may help support creators' interests within the digital environment.[28]

Regulating AI-Based Content: There may need to be new laws created for determining who owns and is responsible for works made digitally through artificial intelligence. Congress should develop a legal framework to define liability, including rules governing Intellectual Property (IP) protection as it applies to artificial-intelligence-produced materials.[29]

Raising Awareness and Innovation: Governments, educational institutions and businesses should create greater awareness of Intellectual Property (IP) Rights. When people have a greater knowledge of how to protect their IP, it stimulates greater innovation, creativity and compliance with the law.

Expansion of Inter-Country Cooperation: Digital Rights Violations are typically determined by where the content is hosted, which may not be the same as where the infringer resides. Given this, we will require more coordination throughout the world to ensure the protection of Digital Rights from violations in the Global Market and by harmonising the various countries' Intellectual Property Laws (Copyright, Trademark and Patent) and expanding the tools used to

---

[27] Novartis AG v Union of India (2013) 6 SCC 1.
[28] Jane C Ginsburg, 'Copyright and Control over New Technologies of Dissemination' (2001) 101 Columbia Law Review 1613.
[29] Abbott (n 20) 112.

enforce these laws (i.e., require data-sharing agreements with third parties to support each other's enforcement efforts).[30]

Enhancement of Platforms' Responsibility: Digital Platforms must take appropriate steps to ensure that they do not allow Copyright Infringements to occur. Effective methods of achieving this include: Developing monitoring systems to monitor Copyright Infringements; Ensuring that the Digital Platform has a clear Copyright Infringement policy and publishing the policy statement; and working with Copyright Owners to limit the occurrence of Copyright Infringements and their effect on Copyright Owners.

WHAT CAN WE EXPECT FROM INTELLECTUAL PROPERTY IN THE DIGITAL ECONOMY?

As technological advancement and evolution progress, intellectual property rights could entail quite a significant amount of change based on how digital technology affects economic activity, as well as how legal systems adjust to accommodate innovation in terms of new ways of creating and/or owning and/or commercially exploiting products and services.

The Effect on Intellectual Property of Artificial Intelligence: As Artificial Intelligence, also known as AI, increasingly impacts the creation of content, innovation, and industrial technology, many issues arise regarding how Copyright, Patent, and Trademark rights will apply to these AI-generated works, and will require statutory law to address these issues. There is a need for a new IP law to provide a balance between emerging technology and protecting the rights of creators.[31]

The Potential Use of Blockchain Technology and Smart Contracts as an IP Management Tool: Blockchain Technology can change the way that IP rights are managed through secure IP ownership records, transparent licensing procedures, and automatic royalty payments. Smart Contracts can aid in generating and help enforce IP rights more efficiently than using another method of enforcement.[32]

Digital Markets and Virtual Property: The rise of the metaverse, along with the growth of virtual worlds, has given rise to new kinds of digital property such as virtual goods, avatars,

---

[30] Carlos M Correa, *Trade Related Aspects of Intellectual Property Rights: A Commentary on the TRIPS Agreement* (2nd edn, OUP 2020).
[31] WIPO, *WIPO Conversation on Intellectual Property and Artificial Intelligence* (2024).
[32] Kevin Werbach, *The Blockchain and the New Architecture of Trust* (MIT Press 2018).

and digital experiences. Securing IP rights in virtual settings will present an increasingly difficult, but critical, legal issue.

International Digital Trade and IP: The growth in digital trading and IP protection is becoming increasingly interconnected with global trade. Greater agreement on IP law and stronger cooperation between countries will be needed to deal with issues related to enforcing IP rights and cross-border disputes.[33]

IMPACTS OF EMERGING TECH ON INTELLECTUAL PROPERTY

Emerging technologies (i.e. artificial intelligence, blockchain, metaverse) have drastically impacted the IP landscape in both a positive (in terms of the innovation and new technologies that they enable) and negative (issues regarding legal and regulatory frameworks) manner.

Intellectual Property and AI: As a result of the growth and use of Artificial Intelligence (AI) technologies, there has been a significant change in the way that content is generated and new ideas are developed. Many forms of human expression can be produced by artificial intelligence systems (e.g. text, music, photographs, software) and will therefore create questions around ownership, authorship and liability in relation to these outputs. Since most existing intellectual property (IP) laws are based on the assumption that humans create the digital assets that form the basis for their protection, AI-created outputs present a very complicated legal issue.[34]

Use of Blockchain to Protect Creative Content: Blockchain technology, which captures ownership and licensing transactions in a secure and transparent way, creates a new means for creators to protect their creative works and manage their digital rights. By using a decentralised method for verifying ownership and licensing transactions, blockchain technology can help to reduce the incidence of IP infringement.[35]

Virtual Assets and Metaverse: With the evolution of the metaverse, there has been the creation of virtual goods, digital identities and virtual marketplaces. The protection of

---

[33] UNCTAD, *Digital Economy Report 2024* (UNCTAD 2024).
[34] Andres Guadamuz, 'Do Androids Dream of Electric Copyright?' (2017) 2 Intellectual Property Quarterly 169.
[35] De Filippi and Wright (n 23) 143.

intellectual property rights in virtual environments raises new issues to consider as they relate to ownership, infringement, and enforcement.[36]

THE IMPORTANCE OF INTELLECTUAL PROPERTY FOR THE DIGITAL ECONOMY

The development and functioning of the Digital Economy, an essential component of which has been generated by intellectual property (IP), where much of the value of an economic transaction takes place from the creation and application of new or better digital technologies, new or better products, new or better ways that buyers or sellers behave, and the use of IP-protected intangible assets. The protection granted to creators, developers, and investors as a means of stimulating, creating new, and promoting innovation for the Digital Economy, along with furthering GDP growth, technological development, and the competitiveness of all industries, will be the purpose of all legislation, policy development, programs, and operations that are enacted for the Digital Economy.

Encouragement of Innovative Thought and Creation: One of the goals of intellectual property rights is to foster and encourage innovation and creativity. Intellectual property rights give creators or inventors exclusive rights to their intellectual property, which encourages them to create new technologies, artistic creations and develop new ways of doing business. In the current digital economy, where ideas and information are valuable assets, intellectual property protection provides motivation for a person or organisation to invest time, energy and/or resources into developing creative works.[37]

Protection of Digital Content: The digital landscape has made possible the creation and distribution of many types of content, such as software, music, movies, eBooks, online courses, and digital art. The legal protection of intellectual property rights provides protection for unauthorised copying, distribution or commercial exploitation of digitally created content through the application of copyright laws. Copyright laws have a large impact on protecting digitally created works and ensuring that digital creators receive both recognition and monetary benefit from their work.[38]

---

[36] Cathy Hackl, *Into the Metaverse* (Bloomsbury 2022).

[37] William M Landes and Richard A Posner, *The Economic Structure of Intellectual Property Law* (Harvard University Press 2003).

[38] Lionel Bently and Brad Sherman, *Intellectual Property Law* (6th edn, OUP 2022).

Growing Economies and Increasing Competitive Advantage: Intellectual property rights, such as trademarks, patents, and copyrights, enhance the economy by encouraging innovation through stronger intellectual property protections and therefore attracting higher amounts of research and development investments into innovative industries. Since companies with significant amounts of valuable intellectual property (IP) they produce have a competitive advantage over other businesses within their industries, the establishment of a solid IP infrastructure creates a foundation for the basis of innovation, productivity, and technological development.

Facilitating the Capture of New Technologies and Making Capital Investments Easier: Intellectual property rights are essential in facilitating technology transfer and knowledge acquisition between industries and countries. When there is an adequate level of intellectual property protection for an investment, there is increased confidence on the part of investors to invest domestically as well as internationally. Companies are also much more likely to share their technologies, enter into licensing agreements, and engage in joint research and development projects when their intellectual assets are protected.[39] For that reason, intellectual property rights are one of the most significant forces in promoting innovation and enhancing economic cooperation both nationally and internationally.

Helping Digital Entrepreneurs: The Digital Economy has created many new small businesses and technology-based businesses. The use of intellectual property rights gives digital entrepreneurs the ability to protect their inventions, create a brand, and sell their products and services. For a large number of digital companies, having intellectual property as an asset is one of their most valuable forms of ownership and will support continued growth and stability over time.

THE SIGNIFICANCE OF DIGITAL PLATFORMS TO INTELLECTUAL PROPERTY RIGHTS PROTECTION

Digital platforms are a vital component of today's economy and provide purposes for communication, commerce, entertainment, and information sharing. E-commerce sites, social media sites, streaming sites, and content-sharing applications have completely altered how we create and distribute intellectual property. Along with providing several opportunities for

[39] Keith E Maskus, *Intellectual Property Rights in the Global Economy* (Institute for International Economics 2000).

creators and businesses, there are also several intellectual property infringement and enforcement challenges related to these digital platforms.

E-commerce Platforms: E-commerce platforms have made significant changes in how products, services, and the sale of those products/services are done. However, many issues exist with e-commerce platforms regarding counterfeit goods, trademark violations, and unauthorised use of intellectual property. Many e-commerce platforms have developed systems to remove counterfeit and trademark-infringing products from their sites and have cooperated with rights holders to protect their intellectual property rights.

Social Media Platforms: Users can develop, disseminate, and distribute content via multiple channels online thanks to the emergence of social media platforms. While social media platforms give users an excellent opportunity to share content with large audiences, they also make it easier for people to infringe on someone's copyright by using or otherwise sharing photos, videos, music, or any other creative work without permission. Therefore, there is a great need for effective policies regarding copyright compliance and content moderation.

Streaming Services: Streaming services are changing how we access entertainment by making it easily accessible and legal via the internet with respect to music, movies, and television series. Streaming services that function based on approved licensing agreements do their part in reducing piracy/illegal downloads as they allow rights holders to receive compensation for their created works. In this way, streaming services are helping to protect and commercialise intellectual property rights in digital marketplaces.

Content Sharing Platforms: Content Sharing Platforms provide a means for users to upload and share their creative works, such as photographs, educational materials, or videos, with others. In addition to providing opportunities for creativity and sharing information, there are also challenges associated with content uploaded without authorisation and the infringement of intellectual property. Therefore, notice and takedown procedures have become an important tool for remedying these types of infringement.

Liability of Intermediaries: The legal obligations and responsibilities of intermediaries who operate in the digital world (i.e., intermediaries operating in cyberspace) continue to evolve as it relates to protecting intellectual property. When an intermediary receives notice of a possible infringement, the intermediary is generally deemed to have a duty to act on that notice and to take reasonable steps to remove the infringing content. The law is currently undecided on the extent of an intermediary's liability for infringing activities when balancing the competing interests of innovation, freedom of expression, and protection of intellectual property.[40]

EVALUATION OF THE ECONOMIC FACTORS OF INTELLECTUAL PROPERTY RIGHTS IN TODAY'S DIGITAL WORLD

Intellectual Property Rights (IPR) are shaping how economic growth will be created and developed within our communities by driving a large part of the economic development community in the digital age. Since the economy is becoming based on the concepts of knowledge, innovation, and technology, intellectual property has become one of the most valuable assets within economics. Through effective enforcement of intellectual property rights, we create an environment where individuals and businesses will benefit from their creations and, therefore, contribute to overall economic growth, investment, and job creation.

Economic Development: The development of the economy can be attributed to increasing innovation and technology through the grant of Intellectual Property Rights (IPR). IPR grants business people and the general public the incentive to invest in research and development (R&D). New products, services, and technologies will be developed as a result of businesses creating an environment that encourages R&D via strong Intellectual Property Rights (IPR). This, in turn, will increase productivity and competitiveness within the economy.

Expansion of Digital Enterprises: The digital economy has enabled independent entrepreneurs to start a new business with minimal investment or start-up costs. Start-up businesses and digital companies make use of IPR (e.g., software, trademarks, copyrights, new technology) where possible. Using IPR provides security in the legal realm for the business, as well as allowing it to more effectively commercialise its innovation.

Start-Up Environment and Innovation: Innovative idea protection and business models under an effective intellectual property system are important for creating a successful Start-up business. Investors are more likely to provide financing for businesses that have a good amount of intellectual property. These rights help form an innovative community that fosters technology and the Entrepreneurial Spirit.

Job Creation: Innovation Industries create jobs in all areas, including technology, entertainment, research, manufacturing, and digital services. The protection of intellectual

[40] Shreya Singhal v Union of India (2015) 5 SCC 1.

property helps promote creativity and investment for these Industries; thus, they all support the job creation of new employment opportunities and lend to economic stability.

Growing a Knowledge-Based Economy: Knowledge-based economies are increasingly reliant on knowledge, information, and innovation, as opposed to physical resources that are traditionally used to create wealth. Intellectual property rights are the foundations of the knowledge-based economy in that they help protect intellectual assets and create incentives for people to come up with new ideas. As a result, they enhance a country's ability to compete within the global digital marketplace.

RECOMMENDATIONS

In order to address the challenges posed by the digital economy regarding the protection of intellectual property, various legal and policy measures need to be adopted.

Strengthening Digital Copyright Enforcement: Governments should establish better mechanisms for combating online piracy and unauthorised use of material protected by copyright. The use of effective notice and takedown processes, as well as effective digital rights management systems, will allow for stronger protection of copyright in the digital economy.

Regulating AI-Generated Content: Governments should provide a clear set of guidelines that will provide clarity and certainty of ownership, authorship, and liability with respect to works of authorship created through the use of artificial intelligence. By providing this clarity and certainty, governments can reduce legal uncertainty and foster innovation.

Enhancing International Cooperation: Countries should work to increase collaboration regarding the enforcement of intellectual property globally, because digital activities transcend national borders. There exist opportunities for harmonisation of laws and for sharing information that will significantly improve the capacity to protect Intellectual Property across borders.[41]

Improving Platform Accountability: Digital Platforms must adopt systems that allow them to effectively monitor and address instances where Intellectual Property is being violated. This helps prevent infringement of Intellectual Property and protects rights. Additionally,

[41] World Trade Organization, *TRIPS Agreement* (1994).

collaboration between the Platforms and the rights holders will also help address violations and protect rights in a more effective manner.

Increasing the Awareness and Education about Intellectual Property: Governments, schools and businesses need to promote greater awareness of intellectual property rights. By providing more knowledge about universal intellectual property laws, these players will likely create a better level of compliance as well as an increase in innovative development.

Establishing Special Intellectual Property Mechanisms: Special courts, tribunals or other methods of resolving disputes related to intellectual property cases will improve the efficiency of enforcing intellectual property rights as well as reduce the amount of time it takes to resolve disputes associated with the enforcement of these rights.

CONCLUSION

The digital economy has modified the manner in which we make, deliver, and sell our intellectual resources. Advances in technology, such as AI, Blockchain, cloud computing, digital platforms, and e-commerce, have increased the pace of innovation and global economic expansion. The rapid pace of development of these technologies has also caused the way that we protect our intellectual property through IPRs to change quickly. For this reason, IPRs are the primary legal tools for protecting creativity, enabling innovation, and encouraging competition.

The research described herein evaluated the correlation between the digital economy and intellectual property rights by analysing their underlying concepts, their respective national and international legal systems, their current challenges from judicial decisions, as well as their associated policy implications. The results demonstrate that protection for intellectual property provides necessary protections for individuals, institutions and industries that use intellectual property to conduct transactions in virtual marketplaces. Protection of copyrights, patents, trademarks, and trade secrets will continue to contribute to the promotion of innovation as well as the broadened development of economies globally.[42]

However, many of the trends occurring within the digital landscape provide additional complications to existing intellectual property rights. Some of the problematic areas identified include: online piracy; AI-generated content; online trademark infringement; counterfeit

[42] WIPO, *Global Innovation Index 2024* (WIPO 2024).

goods; blockchain assets; data ownership; and cross-border enforcement of intellectual property. Each of these developments indicates that legal systems across countries must continue to adapt in order for them to remain viable and provide adequate protection regarding technological advances moving forward.[43]

This analysis shows how critical judicial institutions, government officials, digital media platforms, and international agencies are in enhancing intellectual property protection. To successfully respond to newly emerging types of infringement, effective enforcement mechanisms, international collaboration, accountability for platforms and technology solutions are needed in order to preserve intellectual assets in the digital world.

Intellectual property rights also contribute greatly to economic growth through their ability to provide incentives for research & development; support to entrepreneurial activities in the digital economy; attract foreign investments, create jobs; aid in developing a knowledge-based economic base. With innovation being one of the key drivers of future economic growth, the role of Intellectual Property Protection and therefore its need for continued enhancement will also continue to grow as the future unfolds.

To summarise, the future of intellectual property rights in the digital economy will depend very much on how legal systems can strike a balance between providing the creator and the innovator with adequate protection for their intellectual work, whilst allowing the public to access knowledge, to facilitate technological progress and to create economic opportunities for society. Therefore, achieving a balance between both through responsive legislation, efficient enforcement and international cooperation will be necessary if the digital economy is to be built as a sustainable, innovative and inclusive economy. An important part of the technological advances and economic success in the twenty-first century will continue to be the existence of a strong and flexible intellectual property system.[44]

---

[43] WIPO (n 10) 89.
[44] Daniel J Gervais, *The TRIPS Agreement: Drafting History and Analysis* (5th edn, Sweet & Maxwell 2021).