International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 08 Issue: 07 | July - 2024 SJIF Rating: 8.448 ISSN: 2582-3930

An Empirical Study on Growth of IPR during Covid-19 Pandemic

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Abstract **-** The COVID-19 pandemic has brought unprecedented challenges to the global healthcare system, necessitating rapid innovation and collaboration to combat the virus. Intellectual Property Rights (IPR) have played a crucial role in promoting innovation and providing legal protection to inventors and innovators. This article provides an overview of the development of IPR in the context of COVID-19 in India. It discusses the various types of intellectual property protections available, including patents, trademarks, copyrights, and trade secrets, and their relevance in the healthcare sector during the pandemic. Additionally, it emphasizes the need for a balanced approach to IPR to ensure both incentivization for innovation and equitable access to essential healthcare technologies and treatments. Furthermore, the article examines the initiatives taken to support IPR during the COVID-19 crisis. It explores the expedited patent examination procedures and the establishment of the "COVID-19 Response" portal to fast-track patent applications related to the pandemic. The article addresses the challenges and debates surrounding IPR during the pandemic. It delves into issues related to licensing agreements, technology transfer, and the balance between proprietary rights and the global public health interest. The article highlights the significance of international collaborations, such as the COVAX initiative, in addressing these challenges and ensuring access to affordable healthcare solutions. Finally, the article concludes by emphasizing the evolving nature of IPR in the context of COVID-19 and the need for continuous adaptation. It underscores the importance of striking a balance between promoting innovation and ensuring affordable access to life-saving technologies, medicines, and vaccines. The article aims to provide valuable insights into the development of IPR during the COVID-19 pandemic, contributing to the ongoing discourse on intellectual property and public health.

Keywords: IPR, Invention, Innovation, Covid-19, incentivization, licensing agreement.

1. INTRODUCTION:

The COVID-19 pandemic has presented unprecedented challenges to societies worldwide, compelling them to navigate uncharted territories in healthcare, research, and development. In this context, intellectual property rights (IPR) have emerged as a critical factor in facilitating innovation, incentivizing inventors, and ensuring equitable access to life-saving technologies. With its robust healthcare industry and significant research capabilities, has been at the forefront of IPR developments during the COVID-19 period. The development of IPR in the world amidst the pandemic has been driven by the urgent need for innovative solutions, including diagnostics, therapeutics, vaccines, and medical devices. While the primary objective of IPR is to encourage creativity and protect the rights of inventors, striking a balance between proprietary rights and public health imperatives has become a crucial concern.. It will shed light on the initiatives undertaken by the to support IPR, expedite patent examination procedures, and streamline the regulatory processes related to COVID-19 inventions. Furthermore, it will explore the challenges and debates surrounding IPR, including issues of licensing agreements, technology transfer, and the balance between proprietary rights and global public health interests. Understanding the development of IPR in the entire world during the COVID-19 period is crucial for comprehending the world's response to the pandemic and its impact on the healthcare ecosystem. It provides valuable insights into the collaboration between academia, industry, and government agencies in promoting innovation, addressing public health needs, and ensuring access to affordable healthcare solutions. Moreover, it contributes to the ongoing discourse on the role of IPR in times of crisis and the implications for global health governance. It highlights the importance of striking a balance between promoting innovation and ensuring affordable access to critical healthcare technologies and treatments. Ultimately, this article seeks to provide a comprehensive overview of the development of IPR during the COVID-19 period in the world, shedding light on its impact and implications for the healthcare landscape and beyond.

1.1 Scope of the study

The scope of this study encompasses an examination of the development of intellectual property rights (IPR) in the context of the COVID-19 period. The study aims to provide a comprehensive overview of the various aspects and implications of IPR during this unprecedented health crisis. The study will delve into the types of intellectual property protections relevant to the healthcare sector, including patents, trademarks, copyrights, and trade secrets, and their application in the context of COVID-19 innovations. It will explore the initiatives undertaken by the governments to support IPR, such as expedited patent examination procedures and the establishment of dedicated portals for fast-tracking COVID-19-related patent applications. Furthermore, the study will analyze the challenges and debates surrounding IPR during the pandemic, including issues related to licensing agreements, technology transfer, and the delicate balance between proprietary rights and the global public health interest. It will explore the implications of IPR development on access to affordable healthcare technologies, medicines, and vaccines. The study will draw upon relevant legal frameworks, government policies, industry practices, and scholarly research to provide a comprehensive analysis of the development of IPR in the COVID-19 period in India. By examining the Indian experience, this study aims to contribute to the broader understanding of the interplay between IPR, innovation, and public health in times of crisis, with insights that can be valuable for policymakers, researchers, and stakeholders in the healthcare ecosystem.

2 Review of Literature

i) In an article written by **E Richard Gold** (2022) in the article titled "What the COVID-19 pandemic revealed about intellectual property" This article critically examines the role of IP in the development and global distribution of vaccines and antivirals during the pandemic. It challenges two prevailing myths: the necessity of patents for innovation and the notion that IP does not impede global access to vaccines and drugs. The evidence suggests that government funding, philanthropy, and procurement contracts were the primary drivers of vaccine development, while IP restrictions and licensing practices delayed access. The study highlights the importance of proactive drug development, increased public efforts, and adherence to policies promoting broad IP licensing to enhance innovation and global equity in pandemic times.

ii) The article written by **Nidhi Bharadwaj**,(2021)titled "Intellectual property and COVID-19 : lessons for the future" This article explores the impact of IP on access to medical technology during a pandemic and discusses potential solutions. It examines the limitations of the Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement and argues for the insufficiency of flexibility provisions in addressing patent barriers. The proposal for temporarily waiving IP and patent rights for COVID-19 vaccines is also evaluated, weighing the advantages and disadvantages. Additionally, the article explores the importance of international cooperation, voluntary initiatives, direct government support, and flexibility within the IP system to enhance access to medical technology during public health emergencies. Ultimately, the article advocates for a comprehensive reform of the IP regime to align profit-seeking motives with global public health goals.

iii) In another article titled "**Impact of Covid-19 pandemic on IPR Laws in India**" (2023, July 8) The COVID-19 pandemic has had a significant disruptive impact on India, affecting both the economy and human lives. Almost all sectors have suffered, with a sharp decline in domestic demand and exports, except for a few areas that experienced high growth. Regarding the impact of COVID-19 on essential medicine laws governed by the Patents Act, Indian patent laws are comprehensive and prioritize the welfare of the public. On the global stage, India has emphasized the need for a global intellectual property (IP) waiver during pandemics. While Indian laws may be sufficient, this may not be the case for all countries. Therefore, it is crucial for companies and nations to prioritize the public interest over individual interests, such as obtaining patents and associated royalties.

iv) In another article authored by **Monalisa Choudhury, and Neolexvision** Blogs, in the article titled, An Analysis of the Role of IPR Regime in Combating COVID-19 Pandemic (July 14, 2020) The safeguarding of Intellectual Property (IP) plays a crucial role in stimulating innovation. Without adequate protection for ideas, businesses and researchers would not receive a return on investment for their inventions, which is particularly concerning amidst the current pandemic. This article offers a concise overview of the significance of IP rights in combating the COVID-19 pandemic, focusing on the role of IP legislations in India. It emphasizes the importance of protecting the IP regime during this challenging time and highlights how innovative and practical solutions have been developed by IP systems to address the severe circumstances caused by the outbreak of COVID-19.

v) In one more article written by **Mohammed El Said** in the article titled "**Radical Approaches During Unusual Circumstances: Intellectual Property Regulation and the COVID-19 Dilemma**".- the authors states that the origins of the ongoing COVID-19 pandemic can be traced back several decades and have been exacerbated by various misguided strategies and policies. It is crucial to scrutinize the effectiveness of the current patent protection system in addressing the challenges posed by the pandemic. The increasing adoption of TRIPS-Plus standards, which prioritize stronger intellectual

property protection, is adversely affecting the affordability and accessibility of medications. Given the urgent need to address the current pandemic, there is a pressing demand for substantial reforms and collaborative endeavors.

3 Statement of the problem

The COVID-19 pandemic has raised significant challenges for the development and implementation of intellectual property rights (IPR) in world's healthcare system. As the country grapples with the healthcare crisis, the impact on various sectors, including pharmaceuticals and medical technology, has become evident. This study aims to address the problem of navigating IPR during the pandemic. Specifically, it will explore the implications for essential medicine laws under the Patents Act and assess the effectiveness of IPR laws in safeguarding the interests of the general public.

4 Objectives

1. To examine the development and implementation of intellectual property rights (IPR) during the COVID-19 pandemic in the entire world.
2. To assess the effectiveness of IPR laws in protecting the interests of the general public during the pandemic.

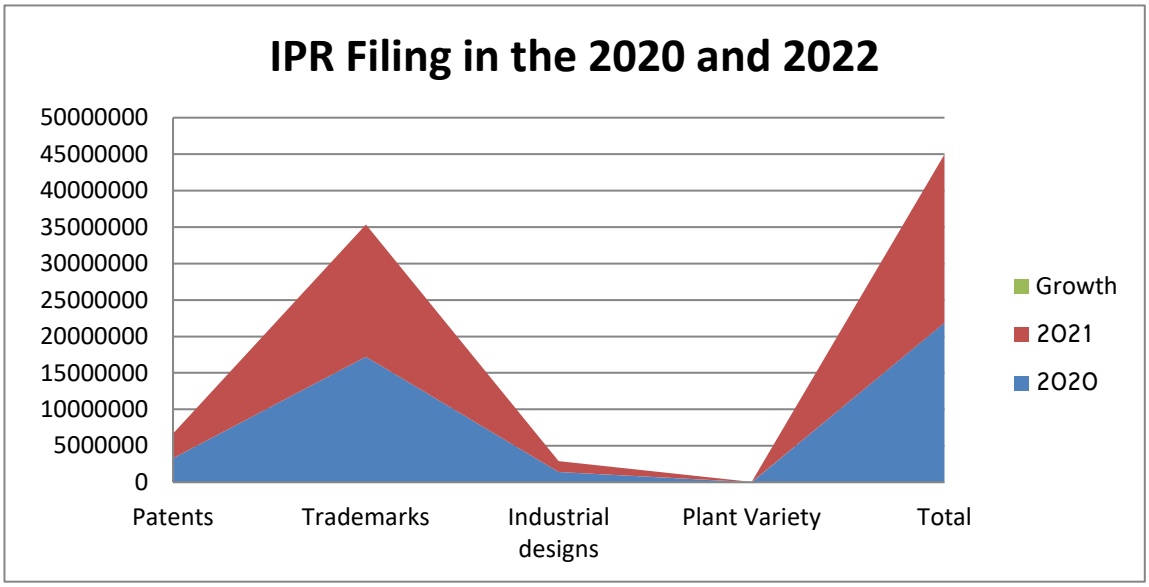
5. Research design

A comprehensive review of relevant academic literature, scholarly articles, reports, and legal documents will be conducted to establish the existing knowledge and understanding of IPR development during the COVID-19 period. The data is collected mainly on secondary sources like official government publications, patent databases, and relevant organizations. Data Analysis: The collected data will be analyzed using qualitative research methods. Thematic analysis will be applied to identify key themes, patterns, and insights related to the development of IPR during the pandemic.

6. Data analysis and Interpretation

Global IP filings for patents, trademarks, and designs reached new heights in 2021, bucking the trend from previous economic downturns. The number of patent applications filed worldwide increased by 3.6%, while trademark filings rose by 5.5% and industrial design filings by 9.2%. Asia led the way in all three categories, with China, South Korea, and India accounting for a significant share of the growth. The resilience of the global innovation ecosystem during the COVID-19 pandemic is evident in these figures. While economic activity slowed in many parts of the world, innovators continued to file for patents, trademarks, and designs. This suggests that the IP system is playing an important role in supporting innovation and economic growth. WIPO Director General Daren Tang warned that the resilience of the IP system should not be taken for granted. The global economy is facing a number of challenges, including climate change and geopolitical tensions. However, Tang stressed that the IP system is essential for addressing these challenges. He called on governments and businesses to continue supporting innovators and creators to use the IP system to bring their ideas to reality. This will help to create the impact that will change our lives for the better.

Year	Patents	Trademarks	Industrial designs	Plant Variety	Total
2020	3281900	17193800	1387800	22620	21886120
2021	3401100	18145100	1515200	25340	23086740
Growth	3.6	5.5	9.2	12	



Patents: The World Intellectual Property Indicators (WIPI) report found that China's IP office received the most patent applications in 2021, followed by the US, Japan, the Republic of Korea, and the European Patent Office. These five offices accounted for 85.1% of the world total. The majority of the top 20 offices received a greater number of patent applications in 2021 than in 2020.

The largest increases were in South Africa, Israel, Mexico, Australia, and Singapore, each reporting double-digit growth. Offices located in Asia received two-thirds of all applications filed worldwide in 2021. This is a considerable increase from 54.6% in 2011, mainly driven by long-term growth in China. Patents in force worldwide grew by 4.2% to reach around 16.5 million in 2021. China surpassed the US to become the top jurisdiction in terms of number of patents in force in 2021. Computer technology was the most frequently featured technology in published patent applications worldwide in 2020, accounting for one-tenth of all published applications. Electrical machinery, measurement, digital communication, and medical technology were the other top-ranked technologies.

Trademarks: The number of trademark applications filed worldwide in 2021 grew by 5.5%, marking a twelfth successive year of growth. The top five offices for trademark filing activity were China, the USPTO, the EUIPO, India, and the UK. Offices located in Asia accounted for 69.7% of all trademark filing activity in 2021, up from 44.7% in 2011. Europe's share declined from 31.6% in 2011 to 15.7% in 2021. North America accounted for 5.9% of the world total in 2021, while the combined share of offices located in Africa, Latin America and the Caribbean, and Oceania was 8.7% in 2021. Research and technology was the top sector in which applicants sought trademark protection abroad in 2021, accounting for 20% of the global non-resident trademark filing reported. Health, clothing and accessories, leisure and education, household equipment, agriculture, and business services were the other top-ranked sectors. There were an

estimated 73.7 million active trademark registrations at 149 IP offices in 2021 – up 14.3% on 2020. China had the most active trademark registrations, followed by the US and India.

Industrial Designs: The number of industrial design applications filed worldwide in 2021 grew by 9.2%, with China accounting for the majority of applications. The top five offices for industrial design filing activity were China, the EUIPO, the UK, the Republic of Korea, and Türkiye. Offices located in Asia accounted for 69.3% of all designs in applications filed worldwide in 2021, up from 64.1% in 2011. Europe's share declined from 28.9% in 2011 to 23.3% in 2021. The combined share of Africa, Latin America and the Caribbean, North America, and Oceania was 7.4% in 2021. Designs related to furniture and household goods accounted for the largest proportion of global filing activity in 2021, followed by textiles and accessories, tools and machines, electricity and lighting, and ICT and audiovisual. The total number of industrial design registrations in force worldwide grew by 10.9% in 2021 to reach around 5.3 million.

Plant variety: The number of plant variety applications filed worldwide in 2021 grew by 12%, with China accounting for the majority of applications. The top five offices for plant variety filing activity were China, the CPVO, the US, Ukraine, and the Netherlands. China's relevant office received 11,195 plant variety applications in 2021, corresponding to 44.2% of the world total. The CPVO received 3,480 applications, followed by the US (1,902), Ukraine (944), and the Netherlands (836). Among the top five offices, China (+24.9%) and the US (+32.8%) saw double-digits growth in filings between 2020 and 2021, while Ukraine (–25.1%) received considerably fewer applications over the same period.

Geographical Indications There are an estimated 63,600 protected geographical indications (GIs) in existence in 2021, according to data from 93 national and regional authorities. GIs are signs used on products that have a specific geographical origin and possess qualities or a reputation that are due to that origin. Examples of GIs include Gruyère cheese and Tequila spirits. China has the most GIs in force, with 9,052. Hungary is in second place with 7,743 GIs, followed by the Czech Republic, Slovakia, and Bosnia and Herzegovina. The high rankings achieved by EU countries are due to the fact that the 5,076 GIs in force through the EU regional system are in force in every member state. GIs in force relating to “wines and spirits” accounted for around 51% of the 2021 world total. Agricultural products and foodstuffs made up 43.6% of the total, while handicrafts accounted for 3.9%. **(Data Source: WIPO website)**

7. Findings

- The World Intellectual Property Indicators (WIPI) report found that China's IP office received the most patent applications in 2021, followed by the US, Japan, the Republic of Korea, and the European Patent Office. Offices located in Asia received two-thirds of all applications filed worldwide in 2021.
- The number of trademark applications filed worldwide in 2021 grew by 5.5%, marking a twelfth successive year of growth. The top five offices for trademark filing activity were China, the USPTO, the EUIPO, India, and the UK. Offices located in Asia accounted for 69.7% of all trademark filing activity in 2021, up from 44.7% in 2011. Europe's share declined from 31.6% in 2011 to 15.7% in 2021. North America accounted for 5.9% of the world total in 2021, while the combined share of offices located in Africa, Latin America and the Caribbean, and Oceania was 8.7% in 2021.

- The number of industrial design applications filed worldwide in 2021 grew by 9.2%, with China accounting for the majority of applications. The top five offices for industrial design filing activity were China, the EUIPO, the UK, the Republic of Korea, and Türkiye.
- Offices located in Asia accounted for 69.3% of all designs in applications filed worldwide in 2021, up from 64.1% in 2011. Europe's share declined from 28.9% in 2011 to 23.3% in 2021. The combined share of Africa, Latin America and the Caribbean, North America, and Oceania was 7.4% in 2021.

- The number of plant variety applications filed worldwide in 2021 grew by 12%, with China accounting for the majority (44.2%) of applications. The top five offices for plant variety filing activity were China, the CPVO, the US, Ukraine, and the Netherlands. Among the top five offices, China (+24.9%) and the US (+32.8%) saw double-digits growth in filings between 2020 and 2021, while Ukraine (–25.1%) received considerably fewer applications over the same period.
- Protected geographical indications (GIs) are signs used on products that have a specific geographical origin and possess qualities or a reputation that are due to that origin. There are an estimated 63,600 GIs in existence in 2021, according to data from 93 national and regional authorities**.** China has the most GIs in force, with 9,052.
- Hungary is in second place with 7,743 GIs, followed by the Czech Republic, Slovakia, and Bosnia and Herzegovina. The high rankings achieved by EU countries are due to the fact that the 5,076 GIs in force through the EU regional system are in force in every member state**.** GIs in force relating to "wines and spirits" accounted for around 51% of the 2021 world total. Agricultural products and foodstuffs made up 43.6% of the total, while handicrafts accounted for 3.9%.

7. Suggestions

The COVID-19 pandemic has presented a challenge to governments and businesses around the world. The main policy challenge at this stage has been to encourage innovation that can lead to the development of vaccines, treatments, and cures for COVID-19. Access to these solutions was limited due to the absence of approved options, rather than any IP-related barriers. Focusing on access without sufficient innovation support could discourage investment in crucial research and development.

Governments should first identify and address obstacles to effective crisis management, such as the lack of manufacturing capacity, transportation impediments, inadequate medical facilities, and healthcare infrastructure. These challenges are not related to IP blocking access to medical solutions. The innovation ecosystem is complex, involving various state and market actors, policies, and programs. Encouraging innovation requires a comprehensive approach, including increased public research funding, scientific collaboration, public-private partnerships, and market incentives.

The World Intellectual Property Organization (WIPO) is available to provide advice and assistance to member states on innovation policies, the use of exceptions and limitations, and the modification of IP rules to mitigate the COVID-19 crisis's damage. Measures should be targeted to the crisis and lack of access where there is evidence of IP barriers, while also considering the survival and well-being of inventors, creators, startups, and economic agents in cultural and technological communities. WIPO has implemented measures to contribute to the innovation challenge during the crisis, such as establishing a clearing-house or policy-tracker for IP offices' measures, providing access to technological information related to COVID-19 through the PATENTSCOPE database,

facilitating access to scientific journals through the ARDI program, and establishing Technology and Innovation Support Centers worldwide.

9. Conclusion

In conclusion, a well-functioning IP system seeks to strike a balance between competing interests in technology and creativity. During emergencies like the COVID-19 pandemic, targeted and time-bound policy measures, voluntary actions, and comprehensive innovation strategies are essential to address challenges and support the development of solutions. Governments and market actors should work together to enhance innovation performance and ensure access to vital medical solutions while considering the broader well-being of society and the economy.

The liturature provides a comprehensive analysis of the development of Intellectual Property Rights (IPR) during the COVID-19 pandemic in India. By exploring the challenges faced by innovators, the government's response, and the implications of the pandemic on IPR-related policies and practices, the study offers valuable insights into the evolving landscape of IPR in extraordinary circumstances. The findings of this research can inform policymakers, legal professionals, and innovators on the role of IPR in fostering innovation and addressing public health needs during global crises.

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