Review

Empirical Evidence for Policy Formulations and Implications for IP Commercialisation from Knowledge Economy Perspectives

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Empirical Evidence for Policy Formulations and Implications for IP Commercialisation from Knowledge Economy Perspectives

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Abstract: Intellectual property (IP) rights protection is crucial for promoting innovation and economic growth. Stronger IP protection is associated with higher economic growth across measures of openness and alternative model specifications. Legal provisions for IP rights are challenging in the knowledge economy. In Sri Lanka, there is no fully committed national policy for IP, but the back-and-forth foundational elements are touched. Furthermore, the GDP growth rate of countries investing substantially in research and development shows a direct correlation with patent filing, whereas some studies show that IP policies increase patent output but do not necessarily encourage patent commercialisation. It urges the requirement for a comprehensive IP framework. Hence, this study aims to discuss the role of empirical evidence in IP policy formulation and its implications for enhancing economic growth in Sri Lanka, which further facilitates comprehension of policymakers in fostering innovation, creativity, and economic growth in the knowledge economy.

Keywords: Commercialisation; Empirical Models; Innovation Value Creation Chian; Intellectual Property; IP Policy; Knowledge Economy

1. Introduction

Protection of intellectual property (IP) rights is essential for influencing incentives for innovation, which in turn affects economic growth by promoting innovation, sharing technological knowledge, safeguarding innovators, making money off of innovations, and benefiting consumers. Cross-country data analysis indicates that stronger IP protection is associated with higher economic growth (Neves, Afonso, Silva, & Sochirca, 2021; Santacruz, 2021). This relationship holds true across different measures of openness and alternative model specifications and robustness in the research and development (R&D). The economic models are being adapted to reflect the empirical evidence in the paradigm shift in the economy towards knowledge. It is a challenging task to cope with those changes and provide a legal provision to protect the IP rights of the inventors, particularly in the knowledge economy, since, in globalisation, knowledge is volatile even though it is defined as a non-rival and non-excludable asset in recent past hypothetical models (Șerban, 2020). Knowledge in the innovation value chain is composed of incubation, acceleration, and spillover, and in the latter stage, entrepreneurship and commercialisation play a critical role, while in the foremost one, IP rights. In Sri Lanka, to date, there is no wholly committed national policy for IP, but back and forth, the subject was touched on in the Science and Technology Policy 2008 under the policy goal and objective number 8 and the National Science and Technology Strategy 2011–2015, draft report on proposed National IP Policy 2018 and Vision 2025 policy documents (IPS, 2018; MoT&R, 2010; NASTEC, 2008). In the global context, countries that invest heavily in Research and Development (R&D) have a close relationship with GERD in terms of GDP, patent filings, and economic growth rate in relation to the implications of sound IP policies. In contrast, some of the policy studies show in the rapidly

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developing economic context that the IP policy has increased patent output, but it does not encourage patent commercialisation, and the effect of the patent subsidy policy on the economic quality of patents is insignificant (Gong & Peng, 2018). This emphasises that the successful formulation and implication of an IP policy are possible with a model where ability (access and speed) and capability (skills and education) act in the same environment, creating many opportunities for better outcomes and high performance while providing legal certainty and promoting science and technology development. Sri Lanka needs a comprehensive framework that would need to be decided by the key players at the science and policy interface, whether it is to be in the form of a new policy or an implementation strategy for IP in terms of its contribution to the national economy.

This study focuses on the evidence found in pertinent literature on the formulation and implementation of IP policies in the era of the knowledge economy, where Sri Lanka is at the bottom of the ladder but has the potential to climb it gradually. In this regard, the study aims to address the following research statements: "Role of empirical evidence in the formulation and implications of IP policies in the knowledge economy" and "Sri Lanka in view of the implications of IP-related policies to enhance its economic performance.

Section 1 provides the rationale for the research statements and outlines the methodology that was adapted to draw the statements through narrative literature in the view of existing knowledge. The results and discussion in Section 3 reinforce the findings in accordance with the statements by further literature, and Section 4 draws the conclusion and consequently implications within the circumstances of Section 5: limitation.

2. Methodology

2.1. Literature Review

Mendeley academic search engine (https://www.mendeley.com/search/), a key resource for academic research with a sizable database of scholarly articles, journals, and papers in a variety of subjects, was used to perform a thorough literature search. It is well-known for its advanced search functionalities and citation management features, which ensure the authenticity and accuracy of its content, making it an essential resource for conducting complete and reputable literature searches in scientific research (Kratochvíl, 2017). The literature search was focused on the keywords "intellectual property policy formulation", "intellectual property policy impact in the knowledge economy", and "intellectual property policy contribution to economic performance". The initial search yielded a substantial number of 1070 records for the keyword search. To ensure relevance and recency of the information, records were filtered based on a time frame of the last 10 years, spanning from 2013 to 2023, since the trend of the subject is rapidly evolving, resulting in 879 records, respectively. Further refinement was performed by narrowing the search to journal articles, resulting in 640 records. Subsequently, non-English articles were excluded from the search, yielding 146 records, respectively. Finally, a meticulous manual analysis was conducted, excluding records deemed irrelevant to the research hypothesis. All authors convened to review the remaining records for relevance. After deliberation, a consensus was reached to select 10 papers that led to a review in depth to support the objective of the work (Figure1), and the synergy of key derived information from them was supported through further citations to ensure the scientific validity pertinent to the two key elements of the research Statements "Role of empirical evidence in the formulation and implications of IP policies in the knowledge economy" and " Sri Lanka in view of the implications of IP-related policies to enhance its economic performance", respectively.

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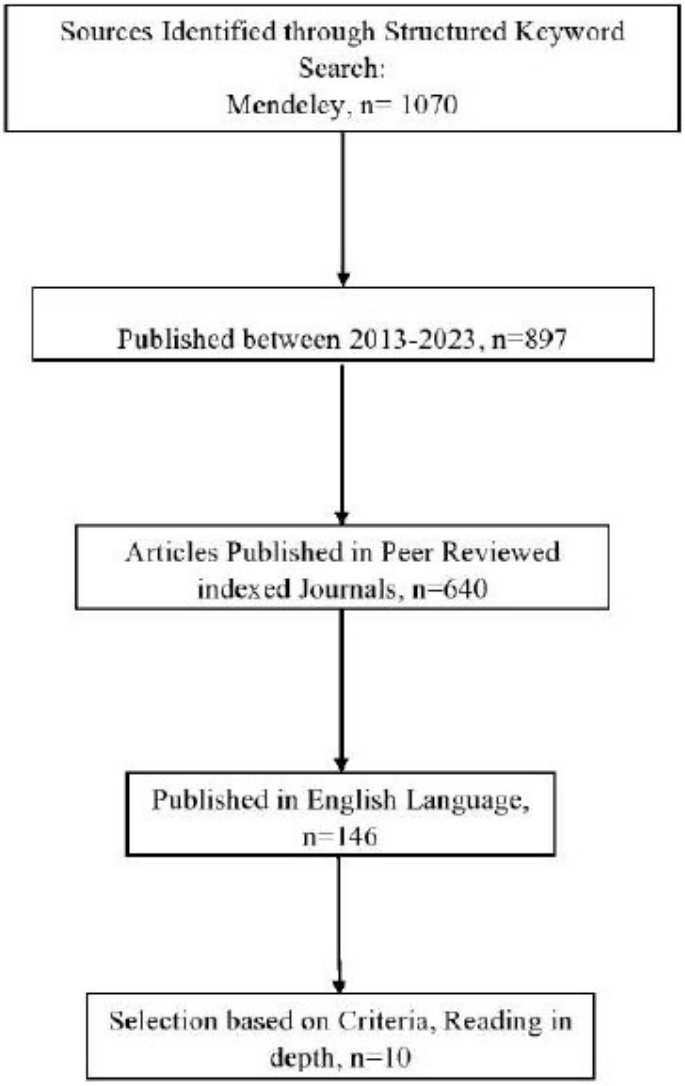

Figure 1. Flow Chart Literature review.

3. Results & Discussion

3.1. Literature Skeleton of the Selected Work Supporting the Research Statements

The essence of the selected 10 academic works synergies the information that intellectual property rights (IPRs) can be transformed into sustainable economic wealth in developing nations by establishing institutional frameworks to mitigate theft, piracy, and illegal transfer of IPRs. Addressing institutional weaknesses and proposing key policy suggestions can secure IPRs for optimal economic performance. However, conflicts between international IPR systems and their implications can hinder trade and development in developing nations. The complex dynamics surrounding IP protection, particularly in free trade agreements, can jeopardise health rights and contradict government policies. IP protection in emerging economies can promote innovation but also pose challenges like increased market power for rights owners and labour displacement. Tailoring an IP system of a country to its specific socio-economic context can significantly contribute to innovation. Local governments and higher education institutions should synchronise their incentive strategies with national frameworks to foster an innovation ecosystem conducive to economic development. Copyright-based industries contribute significantly to the economy, and

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technology transfer policies, particularly IP rights and foreign direct investment, play a crucial role in promoting economic growth and innovation (Alfarraj, 2016; De Beer, 2016; Julia, 2015; Kashyap & Agrawal, 2020; Leal, Souza, & Solagna, 2014; Olusogo, 2020; Pouris & Inglesi-Lotz, 2017; Sattiraju, Ligade, Muragundi, Pandey, & Janodia, 2023; Shenkoya, Kim, & Development, 2021; Varma, Gurpur, & Development, 2017). Table 1 provides a comprehensive overview of all these 10 academic papers in line with the research statements.

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Table 1. Literature skeleton of the selected work supporting the research statements.

#	Article name	Published date	DOI	Journal	Key findings; support for the hypothesis
1	A Precis on Intellectual Property Rights: Challenges and Prospects for Nigeria's Economy	2020	https://doi.org/10.35609/gjbssr.2020.8.3(2)	GATR Global Journal of Business Social Sciences Review	The Intellectual Property Rights (IPRs) can be transformed into sustainable economic wealth developing nations by establishing institutional frameworks to mitigate theft, piracy, and illegal transfer of IPRs, thus fostering economic growth. It underscores the importance of addressing institutional weaknesses to combat intellectual property infringements and proposes key policy suggestions to secure IPRs for optimal economic performance.

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2	Evidence-Based Intellectual Property Policymaking: An Integrated Review of Methods and Conclusions	2016	https://doi.org/10.1111/jwip.12069	Journal of World Intellectual Property	There are various methodologies and analytical frameworks to understand the economic impact of intellectual property (IP), none provide complete, reliable information independently. Instead, an integrated approach is necessary for combining different frameworks and data sources to connect empirical data with macro-economic insights to inform effective IP policy-making.
3	Global Ruling. Intellectual Property and Development in the United Nations Knowledge Economy	2014	https://doi.org/10.1590/S1809-43412014000200004	Vibrant: Virtual Brazilian Anthropology	Conflicts between supporting the international intellectual property rights system and its implications act as barriers to trade and development for developing nations. It highlights the complexities of integrating public policy aspects into existing intellectual property frameworks, emphasizing the intricate historical context and the dynamics among various stakeholders during the negotiation process.

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4	Globalization and intellectual property rights: A case-based critique on access to medicines in a TRIPS plus world	2017	https://doi.org/10.1186/s12992-022-00826-4	Indian Journal of Public Health Research and Development	The complex dynamics surrounds intellectual property (IP) protection, particularly in Free Trade Agreements (FTA) between countries, where the agreement provisions can conflict with local laws and affect access to health and innovation. It highlights the potential negative impacts of implementing such agreements, especially in developing countries, where they may jeopardize the right to health and contradict government policies aimed at poverty reduction and sustainable development.

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5	Intellectual Property Protection in Emerging Economies and Trade Related Intellectual Property Rights	2016	http://dx.doi.org/10.2139/ssrn.2878138	SSRN Electronic Journal	The dual nature of intellectual property (IP) protection in emerging economies: while it facilitates economic growth by promoting innovation and knowledge creation, it also poses challenges such as increased market power for rights owners, labor displacement, and potential deterrence of foreign direct investment. It emphasizes the importance of creating an environment conducive to economic growth through competitive policies and practices to maximize the benefits of IP protection while mitigating its negative impacts in emerging economies.

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6	Intellectual property rights policies for innovation in Malaysia	2016		Directorate for Science, Technology and Industry	Intellectual property (IP) system of a country can significantly contribute to innovation if it is tailored to the country's specific socio-economic context, taking into account factors such as economic growth, industrial development, infrastructure, and the needs of different economic actors. It emphasizes the importance of considering diverse priorities and addressing constraints such as limited access to finance and skilled human capital to boost innovation performance through effective IP policy.
7	National and Higher Education Institutions (HEIs) IP Policies: Comparison of Indian HEIs' IP Policies from a Global Perspective	2023	https://doi.org/10.1007/s13132-022-00915-0	Journal of the Knowledge Economy	The necessity for local governments and Higher Education Institutions to synchronize their incentive strategies and policies with national frameworks, particularly in implementing robust IP policy frameworks at both state/region and Higher Education Institutions levels to foster an innovation ecosystem conducive to economic development.

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8	Scale development and modeling of intellectual property creation capability in higher education	2020	https://doi.org/10.1108/JIC-09-2018-0168	Journal of Intellectual Capital	The development and validation of a scale to measure Intellectual Property Creation Capability (IPCC) in Higher Education Institutes (HEIs) revealing significant positive relationships between policy, incentives, research facilities, working culture, and IPCC under the conditions of a country. It offers valuable insights for formulating strategies to enhance IP creation in HEIs and contribute to understanding IP creation dynamics in the context of Indian higher education and similar developing countries.
9	The contribution of copyright-based industries to the South African economy	2017	https://doi.org/10.17159/sajs.2017/20160286	South African Journal of Science	The copyright-based industries significantly contribute to the economy, accounting a considerable percentage of GDP, surpassing sectors like agriculture and food, beverages, and tobacco. Hence, policymakers should actively monitor and promote the development of these industries to harness their economic potential.

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10	The impact of technology transfer / policies on the economic catch-up of the Korean National Innovation System and its implications for Nigeria	2021	https://doi.org/10.1080/204213	African Journal of Science, Technology, Innovation and Development	The technology transfer policies, particularly Intellectual Property Rights, Foreign Direct Investment, and general technology transfer policies, have played a crucial role in facilitating the economic catch-up of country. It emphasizes the significance of the policies in promoting economic growth, income generation, and innovation, ultimately contributing to transition of a country from a developing to a developed country, and proposes a structured policy framework based on these findings.

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I. Role of empirical evidence in the formulation and implications of IP policies in the knowledge economy

The development of appropriate framework conditions for the financing of innovation, the encouragement of creative entrepreneurs and Small and Medium-sized Enterprises (SMEs), and progress in the design and governance of national innovation systems all play a significant role in the effectiveness of the national IP system (Compaore, 2016; UNECE, 2011). Since information is the foundation of the innovative value creation chain, appropriate regulations must be developed to support intellectual property rights in the knowledge economy (Lee & Yang, 2000). Well-designed systems for IPR grant inventors temporary exclusivity, improving their prospects of recouping the significant upfront costs associated with creating and commercialising innovations (UNECE, 2011). It would safeguard knowledge through steps in the chain of development, acceleration, and spillover (Branstetter, 2017). Due to the implications of the science-policy interaction, the nations with the highest number of patents worldwide are also those supported with the most well-defined policies. From a scientific standpoint, funding, and legal aspects, these policies are crucial in narrating the gap between the policy and its consequences (Karpińska, 2020). Such a scenario could be reflected in the number of patents filed compared with the economic growth of a country during the previous 20 years, indicating effective policy implications in the Republic of Korea, which is home to one of the largest patent offices in the world (Figure 2). Owing to the effective implications of IP policies (IP protection), historical data on the worldwide scenario is pertinent to the upward trend in GDP per capita vs. IP right index (Figure 3). In the knowledge economy IP capital is composed of human capital, customer relationship capital and structural capital (Moon & Kym, 2006). Within this context, the development and ramifications of IP policies in the knowledge economy heavily depend on empirical evidence through the following elements of the Intellectual Property Protection (IPP) system.

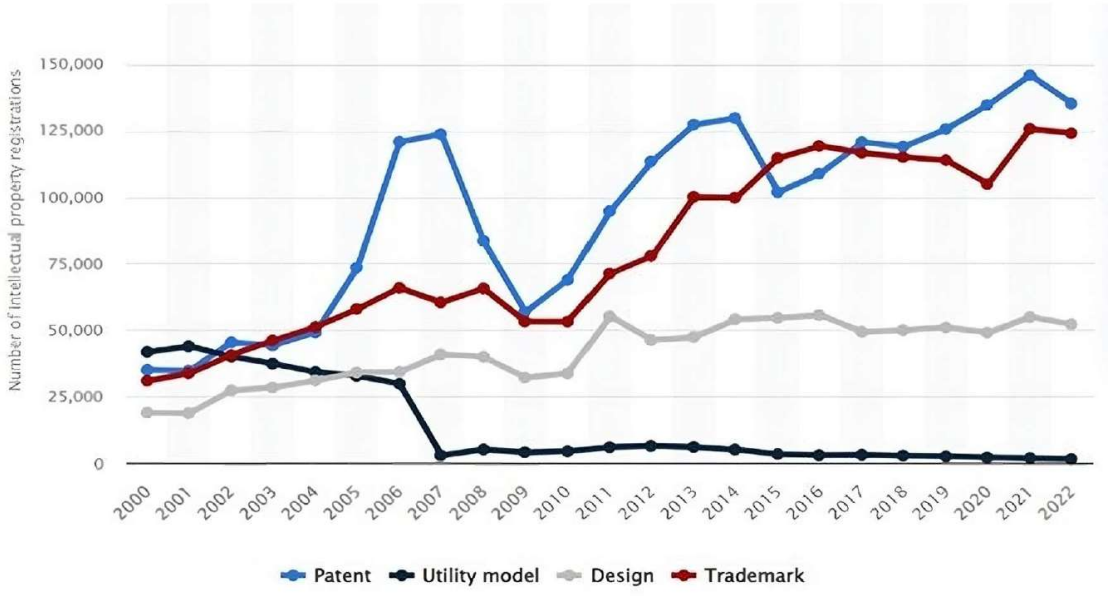

Figure 2. IP registrations in Republic of Korea.

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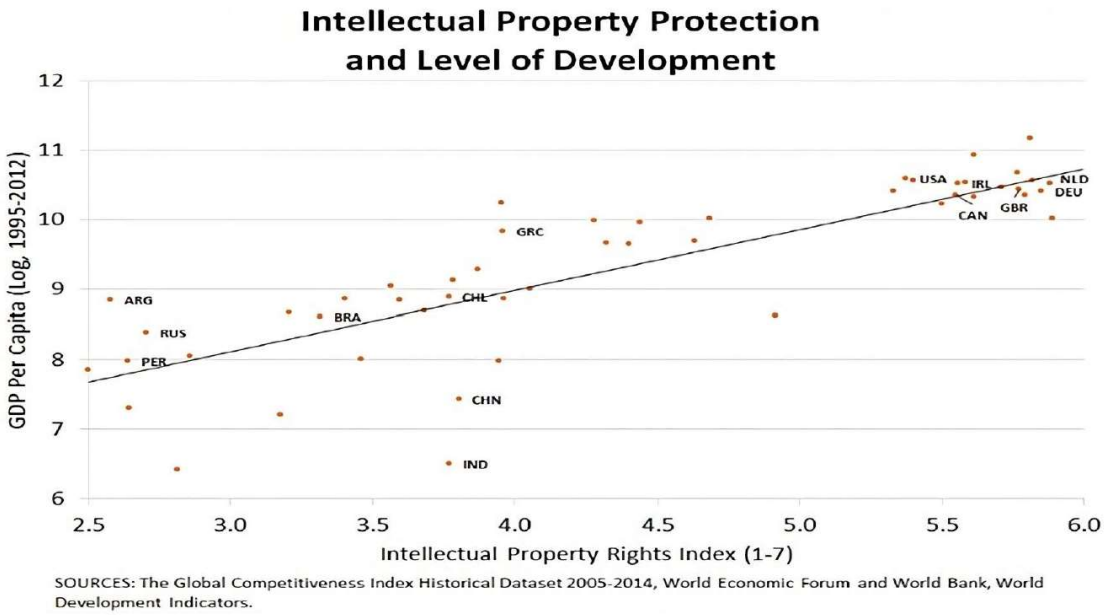

Figure 3. IP protection and level of development.

a) Formulation of Policy: Empirical evidence provides concrete information that helps policymakers better understand the processes of innovation, creativity, and economic growth in the knowledge economy (Autant-Bernard, Fadairo, & Massard, 2013). Innovators need to be given temporary exclusivity to recoup their investments, but it is also critical to disseminate new knowledge so rivals and other innovators can make use of it (Maskus & Reichman, 2004). By analysing the data, policymakers can determine the effectiveness of present intellectual property laws, identify trends, and develop new regulations that balance the interests of artists, inventors, and the general public while fostering innovation (Hemel & Larrimore Ouellette, 2018).

b) Impact Assessment: Using empirical research, policymakers may evaluate how IP laws affect different groups of people, such as businesses, consumers, artists, and society at large. For instance, studies on how patent laws affect innovation rates or the financial advantages of copyright protection can provide policymakers with information concerning the effectiveness and unintended consequences of specific IP regulations (De Beer, 2016; Hemel & Larrimore Ouellette, 2018).

c) Evidence-Based Decision Making: When developing or updating intellectual property regulations, governments may base their choices on evidence-based data. Policymakers can gain practical insights into the practical consequences of various policy approaches by utilising empirical data, as opposed to relying merely on theoretical models or ideological arguments (Kim, Lee, Park, & Choo, 2012; Weible, 2023).

d) Managing Interests: Policymakers can better balance encouraging innovation with guaranteeing people's access to information and culture when they rely on empirical evidence (Ranchordás & Tech., 2015). Policymakers can create laws that encourage innovation while defending the public interest by examining facts on topics like patent thickets, copyright term lengths, or the effect of IP enforcement on access to necessary products (Ard, 2018).

e) International Comparisons: Policymakers can benefit from the experiences of other nations and areas with various intellectual property rights by conducting comparative empirical research. Policymakers can determine best practices and customise their own IP policies to fit the specific needs of their nation by researching the consequences of various policy approaches in diverse scenarios (De Beer, 2016; Huang, Geng, & Wang, 2017).

In general, empirical data is a vital instrument that helps policymakers comprehend the intricacies of the knowledge economy and develop intellectual property policies that foster economic expansion, innovation, and the general welfare of society.

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II. Sri Lanka in view of the implications of IP-related policies to enhance its economic performance

Sri Lanka recognised the relevance of intellectual property and the necessity of including IP policy and innovation policy into the national development plan; which is one of the countries that WIPO has helped build such policies and plans pertaining to activities. Given the ramifications of such policies (Lundvall & Borrás, 2006; Sattiraju et al., 2023), the competitive advantage of this exercise may be investigated through the following essential components; nevertheless, the process of formulating them proceeds glacially.

a) Innovation and Technology Transfer: The economic growth of Sri Lanka can be enhanced by implementing policies that support innovation and technology transfer. Strong IPP helps a country draw in foreign investment for R&D and eases the transfer of knowledge from developed to developing countries. This may result in enhanced productivity, the emergence of new industries, and heightened competition in international marketplaces (Yi & Naghavi, 2017).

b) Encouraging Small- and Medium-Sized Enterprises (SMEs): IP laws can foster the growth of SMEs, which are essential to the economy of Sri Lanka. The government can promote an innovative and entrepreneurial culture by providing support programs to SMEs to safeguard their intellectual property, including patents, trademarks and copyrights. This may result in the creation of new products and services, job creation, and economic diversification (Punchihewa & Sampath, 2020).

c) Finding a Balance through Patent Pooling Agreement (Between Incentive and Inhibitory Effects): Patent rights are aggregated amongst multiple patent holders. Then, the pooled patents are made available to member and non-member licensees and typically the pool allocates a portion of the licensing fees it collects to each member in proportion to the value of each patent. The involvement of international policy players, such as the World Health Organization (WHO), World Trade Organization (WTO), and Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) Council Partnerships, is crucial. It offers a theoretical explanation of the role of IPRs in a global health crisis in addressing the influence of multinational corporations and certain wealthy nations on the efficient formulation of high-end pharmaceutical products to guarantee that every country gets a fair opportunity to access affordable products, such as the recent past experience of producing pandemic vaccines. It stresses how critical it is to treat IP as a common good in order to preserve health equity, which in the end ensures that every nation has equitable access to reasonably priced medical care, especially during international health emergencies like the COVID-19 pandemic (Adikari & Wijesinghe, 2021). Sri Lanka could explore similar models for uplifting the economy through optimal IP regulations to enable pool patents for multilateral benefits.

d) Encouraging Creative Industries: Sri Lanka can make a substantial economic contribution from its thriving creative sector and rich cultural legacy. In addition to encouraging investment in creative industries and boosting cultural tourism, strengthening copyright laws and enforcement procedures can safeguard the rights of authors, artists, and other creators (Gnanapala & Sandaruwani, 2016).

e) Building Capacity and Raising Awareness: It is critical to increase the understanding and utilisation of intellectual property rights by individuals, corporations, and government agencies. Putting money into IP education and awareness initiatives can promote creativity, ease technology transfer, and assist in creating a culture of respect for IP rights (Falvey, Foster, & Memedovic, 2006).

f) International Trade and Investment: Trade and investment flows can be facilitated by bringing the intellectual property of Sri Lanka laws into compliance with global norms. Through the harmonisation of intellectual property legislation with international treaties and accords, such as the TRIPS agreement (Karpińska, 2020), Sri Lanka can increase its appeal as a location for foreign investment and boost its competitiveness in global markets.

Policy regulations pertaining to IP can facilitate innovation, support SMEs, stimulate the creative industries, increase access to critical interventions, and stimulate trade and international investment in Sri Lanka. It is imperative, nevertheless, to make sure that these policies are carefully drafted to balance the interests of society, consumers, and rights holders (Marsoof, Kariyawasam, & Talagala, 2023).

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4. Conclusion and Implication

The formulation and implementation of IP policies within the knowledge economy are crucial for fostering innovation, economic growth, and societal welfare. Empirical evidence plays a pivotal role in shaping these policies by providing concrete data for policymakers to understand the impact of IP laws on innovation, economic performance, and societal interests. This research underscores the importance of empirical evidence in policy formulation, impact assessment, evidence-based decision making, managing interests, and international comparisons. Furthermore, in regard of Sri Lanka, strategic IP-related policies can significantly enhance economic performance by supporting innovation, technology transfer, SME growth, patent pooling agreements, creative industries, and international trade and investment. By addressing these aspects and finding a balance between various interests, Sri Lanka can position itself favorably in the global arena. The evidence presented in this research emphasises the potential for Sri Lanka to utilise IP policies effectively to climb the economic performance ladder. Thus, by considering the implications of IP-related policies, Sri Lanka can foster an environment conducive to innovation, economic growth, and international competitiveness, which is essential for policymakers to carefully craft these policies to ensure equitable benefits for society, consumers, and rights holders, respectively.

5. Limitation

This paper adopted a narrative review that has inherent limitations in terms of objectivity, completeness of the literature search, and interpretation of findings (Green, Johnson, & Adams, 2006). In addition, the subject of this work is evolving rapidly in the global arena, and this paper may not fully draw conclusions at this stage. However, the paper aims to write a perspective on the subject that would open avenues for future endeavors in knowledge generation.

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List of Abbreviations

GERD: Gross Domestic Expenditure of Research and Development
GDP: Gross Domestic Product
IP: Intellectual Property
IPP: Intellectual Property Protection
IPR: Intellectual Property Rights
R & D: Research and Development
SME: Small and Medium-sized Enterprises
TRIPS: Agreement on Trade-Related Aspects of Intellectual Property Rights
WHO: World Health Organization
WTO: World Trade Organization

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