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# Role of Intellectual Property Rights in Technology Transfer

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*Intellectual Property (IP) law confers upon the creator exclusive rights and incentives promoting new creations. Intellectual Property Rights (IPR) enable the holder to derive economic benefit from the exclusive use of their IP by excluding unauthorised use by others. However, the underlying object of IP law extends beyond protecting the interests of individual innovators, but ultimately fosters socio-economic development and advances public interest. This is achieved by safeguarding the interests of creators for a limited period, after which the protected subject matter enters the public domain, enabling wider social benefit. Thus, the public benefits from the development of new goods and improved services. Providing incentives and exclusive rights acts as a catalyst for research and development, often resulting in the creation of new technologies. Consequently, it is usually presumed that IP encourages the transfer of technology and that giving more IP protection boosts technology transfer. This research paper examines the role of IP in the process of technology transfer and how IP protection impacts technology transfer positively and negatively. Although IP constitutes one of the many factors that influence technology transfer to developing countries, its significance in the dissemination of knowledge and technology remains substantial and enduring.*

**Keywords:** *technology transfer, strong IP protection, developing country.*

## INTRODUCTION

Intellectual Property and technology transfer are inseparably linked components of the modern innovation-driven economy. Technology transfer indicates the flow of knowledge and information from research institutions to commercial applications, while intellectual

property provides a legal framework protecting inventions and enabling their dissemination. Intellectual property protection can sometimes create barriers to the access and dissemination of knowledge and technology; paradoxically, these are among the fundamental objectives of the TRIPS agreement, which seeks to establish a minimum standard framework for IP protection. The TRIPS agreement was largely a strategic initiative of developed countries, where the US played a major role in pushing countries to adopt TRIPS. The introduction of Intellectual property into the framework of international trade, by setting uniform minimum standards for protection regardless of the socio-economic conditions of all states, was one of the major concerns raised by developing countries. Developing countries like India were initially reluctant to accept TRIPS, as one of their major apprehensions was that stronger and uniform IP protection could hinder technology transfer.

It was argued by the developed countries that increased IP protection would enhance the transfer of technology. Although developing countries remained sceptical about this claim, fearing restriction of access and availability. This raises fundamental questions as to how IP promote technology transfer to developing countries? Is IP the crucial factor in the dissemination of technology between countries? Thus, interaction between IP and technology transfer remains a widely debated and discussed topic globally. In practice, interaction between IP and Technology transfer is shaped by various factors and predominantly market demand and the availability of absorption capacity of developing countries. As industries become more knowledge-driven, striking the right balance between exclusivity and accessibility is always a challenge.

## WHAT IS TECHNOLOGY?

Technology can be broadly defined as information or knowledge required to achieve a specific production outcome by combining or processing chosen inputs.[1] Technology could be knowledge, skill, expertise, information, etc. It encompasses a wide range of intangible assets like production process, management techniques and financial management techniques. Technology could be embodied or disembodied. Embodied means technology that is integrated into the product itself. Examples include products, like pharmaceuticals,

[1] Keith E Maskus, 'Encouraging International Technology Transfer' UNCTAD–ICTSD Issue Paper No 7, 2004 <https://www.iprsonline.org/resources/docs/Maskus%20-%20Encouraging%20International%20ToT-%20Blue%207.pdf> accessed 21 July 2025

software, in which technological content is readily visible on the face and are relatively easy to study, copy or imitate. Here, technology can be studied by inspecting the product or by the process of reverse engineering. In contrast, disembodied technology includes complex machinery or financial services, technology like artificial intelligence, algorithms, etc. In these cases, a simple inspection of the output or the product is insufficient to learn about the underlying technology. To understand such technology, you need more information or additional expertise. Mere examination of the product will not help in understanding the technology.[2]

## WHAT IS TECHNOLOGY TRANSFER?

Technology transfer can be defined as a process by which a firm or institution in one country acquires access to technology developed in another country and successfully utilises it in its country, thereby generating a productive outcome.[3] Technology is not just information that can be easily communicated, but its transfer requires a capacity to learn and investment to incorporate it into a firm's production system.[4] Technological innovation originates from different sources, including universities, public and private research laboratories, Corporate R&D, individual inventors, and government agencies.

Before initiating transfer of technology, several factors such as the host country's ability to adapt and utilise technology, availability of infrastructure to utilise, presence of skilled labour and expertise capable of understanding the information and applying the technology, etc, have to be taken into consideration. A successful technology transfer is said to take place when the borrower of technology produces an outcome utilising the technology. Furthermore, the technology must be relevant and timely.

Technology transfer creates multifaceted value through commercialisation, economic development and also creates value by social impact. Universities often generate revenue

[2] Keith E Maskus, 'TRANSFER OF TECHNOLOGY AND TECHNOLOGICAL CAPACITY BUILDING' (ICTSD–UNCTAD Dialogue, 2nd Bellagio Series on Development and Intellectual Property, Bellagio, 2002)
[3] Rod Falvey and Neil Foster, 'The Role of Intellectual Property Rights in Technology Transfer and Economic Growth: Theory and Evidence' (2006) United Nations Industrial Development Organization <https://www.unido.org/sites/default/files/2009-04/Role_of_intellectual_property_rights_in_technology_transfer_and_economic_growth_0.pdf> accessed 21 July 2025
[4] Carlos M Correa, 'Can the TRIPS Agreement Foster Technology Transfer to Developing Countries?' in Keith E Maskus and Jerome H Reichman (eds), *International Public Goods and Transfer of Technology Under a Globalised Intellectual Property Regime* (Cambridge University Press 2005)

through licensing a technology developed through R&D; this is an example of commercialisation. Beyond commercial outcomes, through technology transfer, global challenges can be addressed, particularly in the field of health, education, etc. Vaccine technology transferred during COVID-19 to low and middle-income countries is a notable example of social impact created by technology transfer. At the macro level, technology transfer promotes productivity gains, creates more employment opportunities and contributes to both national and regional economic growth.

## VERTICAL TECHNOLOGY TRANSFER AND HORIZONTAL TECHNOLOGY TRANSFER

**Vertical Technology Transfer:** There are two modes of technology: Vertical and horizontal. Vertical technology transfer refers to the progression of technology or information through successive developmental stages, starting from research, followed by experimental development and then culminating in large-scale production and commercialisation.[5] A new technology originates from research commonly conducted in a laboratory setting. For example, the development of a new low-energy-consuming internal combustion engine may begin with research in a laboratory. This technology moves to the next stage of development, i.e. the technology is tested and improvements are made in this stage to make sure that the technology is functionally safe and efficient. Subsequently, the new technology of a low-energy-consuming combustion engine is tested in a vehicle. The next stage is production, where technology is transferred from a research institution or research centre to industry. Upon successful transfer to industry, technology becomes embedded in mass-produced products and commercialised.

Vertical technology transfer can take place within a single organisation or between different organisations. Vertical technology transfer within a single organisation occurs when research and innovation are undertaken in the company's own Research and Development Wing and subsequently technology is developed, scaled and commercialised completely within the same corporate structure. Vertical technology transfer can also be achieved by way of component-to-system integration, which involves incorporating individual technologies into a larger, fully functional system. In this process, various subsystems or components are

[5] Andrzej Klimczuk and Magdalena Klimczuk-Kochańska, 'Technology Transfer' in Monique Constance-Huggins (ed), *The SAGE Encyclopedia of World Poverty* (2nd edn, SAGE Publications 2015)

combined into a single unified system, enabling them to function together as a whole.[6] This is to ensure that specialised components such as AI chip sensors of battery are effectively integrated into a broad range of applications like self-driving cars, medical imaging machines, or industrial robots.

**Horizontal Technology Transfer:** Horizontal technology transfer refers to the movement or sharing of technology from one organisational or industrial environment to another environment, basically between two entities operating at a similar level of development. In such a transfer of information, the underlying knowledge, technology or skill is shared with an organisation that operates at a similar capability level, often in a different industry. An example of the kind of technology transfer is the transfer of blockchain technology to the pharmaceutical supply chain. Initially, blockchain technology was employed in financial transactions to ensure transparency and integrity in monetary transactions. In its new application, blockchain technology was used in tracking drug distribution channels, thereby ensuring transparency.[7] Technology is transferred from one industry to a completely different industry, which operates at the same level, that is, when each firm has a similar capacity to use the technology. This illustrates cross-industry adaptation of technology, a form of horizontal technology transfer.

Horizontal technology may also occur in the form of competitor collaboration. In competitor collaboration, two or more rival companies operating within the same industry work together to develop, adapt or create new technologies by collaborating to create a new technology when they are faced with a common challenge or a competitive threat.

## MODES OF TECHNOLOGY TRANSFER

Technology transfer may occur through a variety of channels. It is broadly classified as market-mediated mechanisms and non-market mechanisms. The fundamental difference is that, under the market-mediated mechanism, the transfer of technology is between willing parties, and there is consideration for the transfer of technology. The transferor is always compensated in market-mediated channels. It involves voluntary exchange of technology

[6] 'System Integration Explained: Methods and Approaches' (*Snap Logic*, 03 October 2024) <https://www.snaplogic.com/blog/system-integration-types-and-approaches> accessed 21 July 2025

[7] Salam Abdallah and Nishara Nizamuddin, 'Blockchain-based solution for Pharma Supply Chain Industry' (2023) 177 Computers & Industrial Engineering <https://doi.org/10.1016/j.cie.2023.108997> accessed 21 July 2025

and is formalised through contractual agreements like licensing, franchising, joint ventures, etc. In contrast, non-market mediated facilitates technology transfer without express monetary consideration. These include technology spill over, imitation, etc.

**Market Channels include:**[8]

1. Trade in services and Goods,

2. Foreign direct investment (FDI),

3. Licensing,

4. Joint Ventures,

5. Mergers and accusations.

**Non-Market Mechanisms include:**

1. Imitation of Technology,

2. Departure of Employees,

3. Data from the Patent Application,

4. Temporary Migration,

5. Technology Spill Over.

## TRADE IN GOODS AND SERVICES

International trade in goods and services constitutes an important channel for technology transfer, particularly when the technology is embodied within the product. Through cross-border commerce, products become widely available and accessible, and this helps in the transfer of information regarding the product design, product characteristics, etc. Access to such goods allows researchers to acquire insight into product specifications and the technology embodied within them.

[8] Keith E Maskus, 'The Role of Intellectual Property Rights in Encouraging Foreign Direct Investment and Technology Transfer' (1998) 9(1) Duke Journal of Comparative & International Law 109 <https://scholarship.law.duke.edu/djcil/vol9/iss1/5/> accessed 21 July 2025

## FOREIGN DIRECT INVESTMENT(FDI)

Through FDI, foreign firms may establish their subsidiary firm in the host country, or they may acquire a foreign subsidiary firm over which the investing firm will have substantial management control. When multinational companies establish their subsidiaries in a host country, they facilitate direct knowledge transfer. When the subsidiary company employs the nationals of the host country, technology, skills, and know-how are transferred to the recipient nation. This is more beneficial in those sectors that lack advanced technology locally. Here, the transfer includes both technical expertise and managerial best practice. However, FDI without setting up local manufacturing, instead of the transfer of goods by importation alone, will not help in transferring technology.[9]

## LICENSING

Licensing is a contractual arrangement between two or more willing parties that grants the right to use specific technology, which is often protected by IPR like patents and trade secrets. Conditions for the transfer of technology can be concluded between the parties. Licensing can be classified as intra-firm licensing and market-mediated licensing. In an intra-firm licensing multinational enterprise, the enterprise retains full control over the technology, know-how and the IPR rights associated with it.[10] The transfer here takes place between the parent company and the subsidiary or within the same company. For example, a US-based multinational company setting up a manufacturing unit in India may transfer its exclusive manufacturing technology to its Indian subsidiary while ensuring secrecy and efficiency. Here, the full control over IP and technology is with the parent multinational enterprise, and no external party gains access to proprietary knowledge.

Market-mediated licensing is when a multinational enterprise licenses its technology to an external firm in another country. Here, the licensee gains access to IP, such as a trade secret, patent, copyright or trademark. This helps in technology diffusion, benefiting the local firms.[11] Compulsory licensing is recognised as another mode through which technology transfer takes place. However, companies with limited technical capacity, inadequate infrastructure and less labour expertise are unlikely to benefit from this mechanism, as

[9] *Ibid*
[10] Maskus (n 2)
[11] *Ibid*

compulsory licensing does not ensure access to the required know-how or technical assistance, which is essential for the absorption of technology and putting the technology into practice.

This is because compulsory licensing confers only the legal right to use a patented invention; it does not obligate the patent holder to disclose the necessary information required to execute the invention. However, the pharmaceutical sector in India, which is technically competent, might be beneficial because we do have expertise and infrastructure facilities to develop and execute technology through the process of reverse engineering. The utility of compulsory licensing as a mechanism for the transfer of technology will be limited when the technical and entrepreneurial capabilities of recipients are weak or when states are more vulnerable to political pressures.[12]

**JOINT VENTURES**

Technology transfer through joint ventures happens when two or more companies collaborate by forming a business partnership and sharing their respective resources to achieve a common goal. Through a joint venture between an international company and a local firm in another country, the international company typically contributes advanced technology, specialised expertise, and new production techniques, while the local firm brings in-depth knowledge of the local market, distribution, network, skilled workforce, local regulatory framework, and brand reputation. Such collaboration brings mutual exchange of complementary capabilities between firms. Profit and risk are shared between the firms according to their agreed contractual terms.[13]

**MERGERS AND ACQUISITIONS**

Mergers and acquisitions represent a powerful mechanism for technology transfer, allowing companies to acquire innovations and IP technical expertise by integrating with an existing firm or purchasing other firms. They allow a firm to obtain technology or knowledge through the purchase, merger or absorption of another enterprise.[14]

[12] Correa (n 4)
[13] Maskus (n 2)
[14] *Ibid*

## SPIN-OFF COMPANIES

Spin-off companies are newly created independent businesses that originate from a larger parent organisation. They are often used to commercialise technology, a product or an invention. Usually, these entities originate from academic institutions or corporate R&D divisions. When a research wing of a large company develops a new technology, forming a spin-off helps in better management, funding and focused strategies, bringing new inventions or technology to market. Academic spinoff plays a major role in the transfer of technology by bridging the gap between research and commercialisation.

## NON-MARKET CHANNELS

Technology can be transferred through informal pathways in the absence of a formal contractual arrangement between the technology originator and the one who is receiving the technology. Non-market channels of transfer do not benefit technology holders, as no royalty or other forms of compensation are paid. Key non-market models include imitation, data disclosed in patent applications, spillover, etc.

## IMITATION

Imitation involves the acquisition of technological know-how through inspecting the product, reverse engineering, software decompilation, and simple trial and error experimentation. Through these practices, a rival firm can learn the technological, design, formula or product characteristics of another firm. Historically, many developing countries and the least developed countries during the initial stages of industrialisation relied upon imitation to build a technology base. Imitation can serve as the easiest method and cost-effective avenue for technology absorption, provided that a country has efficient and skilled personnel and technicians to learn and adapt the technology.[15]

Although imitation is generally condemned as an improper and undesirable practice, the importance of imitation as a means of transferring technology in a developing country cannot be underestimated. Such a presumption overlooks the developmental context, particularly from the perspective of a developing country.

[15] Maskus (n 2)

## DATA FROM PATENT APPLICATION

Another method of acquiring technology without compensation is to study available information from patent applications. Such an application may originate from patent applications filed domestically or abroad. Rival firms often study these documents to gain insights into the underlying technology and subsequently develop an alternative product that does not infringe the claim of the original applicant. However, there is much debate over the question of whether such patent disclosure provides sufficient information so that rival engineers can understand the technology to replicate the invention. Under Article 29.1 of the TRIPS agreement, all members are required to disclose the invention in a sufficiently clear and complete manner to enable a person skilled in the relevant art to carry out the invention.

Although disclosure is a statutory requirement in most cases, a skilled patent agent would normally avoid including information that helps the competitor to invent or easily implement their invention. Patent disclosure and specification very rarely contain information or know-how necessary for the execution of the invention. Specifications are difficult to implement for a technician if they do not have the requisite expertise. Moreover, knowledge regarding an invention is usually not available at the time of filing a patent. As a result, such information may not be available in the patent application, and in most cases, developing a patented product or process based on patent data requires significant experimentation and developmental work. To conclude, it can be inferred that information gathered from a patent application is insufficient and cannot be deemed to be a substitute for technology transfer.[16]

## DEPARTURE OF EMPLOYEES

Another non-market channel of technology transfer is the movement of technical or managerial employees between firms. When employees leave a company to join or establish a competitor firm, they inevitably carry with them valuable knowledge, experience and skill. The extent of such spillover can be influenced by the labour mobility regulation. Sometimes there could be strict or relaxed rules that cover labour mobility, as well as a contractual

[16] Correa (n 4)

obligation, such as non-compete clauses, that prevent employees from working for competitors for a certain period.

## TECHNOLOGIES SPILL OVER

Spill over refers to the unintentional flow of technology. Spillover occurs through various channels, including imitation, through the departure of employees between firms or across borders, and the use of publicly available patent applications. Technology transfer can also take place by observing a demonstration of a new technology or a product. It can be from an exhibition or by attending a lecture or conference discussing the new technology. These are all considered to be spillovers of technology, where transfer of technology takes place unintentionally, without having a formal contract between the recipient and the generator of technology.[17]

## WHY IPR PROTECTION IS IMPORTANT FOR TECHNOLOGY TRANSFER?

There is a consistent market and demand for advanced and finished technology, particularly in developing countries. Therefore, technology is protected by giving IPR protection. Without legal safeguards from the leakage of new technical information, technology holders will be reluctant to offer their innovation to the open market. Intellectual property protection helps to ensure that confidential and proprietary information is disclosed under controlled conditions, enabling secure business agreements and contracts. Securing a new technology with a patent or trade secret thus provides a legal basis allowing firms to share their technology without fear of leakage and imitation.[18]

Although IPR protection can facilitate technology transfer, it is not the sole factor that promotes technology transfer. While protection of new technology is important, Strong IP protection often becomes a barrier to the transfer of technology to developing countries.

## DOES IP PROMOTE OR DEMOTE TECHNOLOGY TRANSFER

There are two different opposing perspectives regarding the interaction between IP and technology transfer. Proponents of strong IP protection argue that strengthening IPR would

[17] Maskus (n 2)
[18] Carlos M Correa, 'The TRIPS Agreement and Developing Countries' in Patrick F. J. Macrory et al. (eds), *The World Trade Organisation: Legal, Economic and Political Analysis* (Springer 2005)

promote the flow of technology to developing countries, as it would encourage technology holders to transfer new information without fear of leakage or imitation.[19] They argue that firms possessing technology will be less willing to transfer it to countries with weak IP protection. Consequently, countries with a stronger IPR framework are seen as attracting more technology because they provide a secure legal environment for companies to share their valuable technology and collaborate with confidence, knowing that their innovations will be protected from unauthorised copying. By contrast, if a developing country has weak IPR protection, companies fear their innovation will be copied, reducing the incentive to technology transfer.[20]

In practice, the decisive factor is not merely about having stringent IP laws, but how effectively a country enforces IPR violations that matter. A country's IP regime is generally characterised as strong or weak based on the effectiveness of enforcement of IP laws and regulations, and the degree of compliance with TRIPS standards. [21]There are instances where countries with weak IP enforcement have still managed to attract technology transfer. China is one such example. Despite having weak IP enforcement, they are one of the major borrowers of technology. It is China's huge market size and consumer demand that attracts technology. By contrast, many African countries who are having IP protection comparable to that of advanced countries have nonetheless exhibited limited or insignificant performance as technology borrowers.[22] Accordingly, real-world patterns do not align with the notion that strong IP leads to more flow of technology transfer.

Proponents of weak IP protection, especially in the context of developing countries, argue that strengthening IP carries both legal and economic consequences. They believe that IP operates as a burden because stronger IP protection increases the price of access to technology, placing it beyond the reach of developing countries, as it is not affordable. Moreover, Strong IP protection, as well as prolonged IP protection, like extending patents, patent ticketing, would hinder Technology transfer because it enables right holders to impose high royalties, making it even harder for developing countries to have access to technology.

[19] Josh Lerner and Mark Schankerman, *The Comingled Code: Open Source and Economic Development* (MIT Press 2013)
[20] Correa (n 4)
[21] Maskus (n 1)
[22] Correa (n 4)

Developed countries, notably the United States, insisted upon the adoption of standards on IPR during the Uruguay Round, arguing that strengthened IPR protection would promote technology transfer to developing countries. However, there is no evidence or proof that supports the notion that there is a direct relationship between strong IPR and the promotion of technology transfer. There have been instances where foreign firms close down their manufacturing units in developing countries, so they can safely export protected products from other sites despite the presence of stronger IP protection. Latin American countries are one such example. Due to globalisation, markets are open for trade, resulting in free cross-border transfer. Many firms choose to export their products rather than manufacture them in the host country. This evades technology transfer and offers minimal benefit to developing countries.[23]

In certain circumstances, stronger IP protection can be problematic, impeding access to technology. The grant of exclusive rights empowers the developer of technology with the opportunity and power to decide whether and to whom the technology will be transferred.[24] Once a firm establishes its monopoly through a strong patent, it has no pressure to trade its technology. In the absence of a competitor, they alone dominate the market. But once the monopoly ends, whether due to patent expiry, or due to a large no of other competitors, or relaxation of strong IP.

Under such circumstances, the company may be willing to license its technology as a means of generating additional revenue. When competition increases, multiple companies enter the market by selling similar products, which makes the firm consider licensing its technology to others. When there are multiple technology holders, a firm competes in the product market as well as in the technology market. When stronger IP protection eliminates competition, companies choose not to license, reducing technology transfer. In such cases, strong IP protection gives the monopoly holders the power to choose when and how to transfer technology.[25] To the extent the IP holder can control the use of his technology, he decides when, where, how to use it and whether to transfer it or not. Though such power is not

[23] Correa (n 18)
[24] Falvey (n 3)
[25] Correa (n 4)

absolute, IPR give right-holders the power to choose how technology can be utilised. In this manner, a stronger IP becomes problematic for technology transfer.[26]

From the foregoing discussion, it may be inferred that the direct role played by IP is very limited in promoting technology transfer. In practice, it is market demand, infrastructure, availability of resources and workforce that predominantly attract the transfer of technology. While IP remains important for safeguarding valuable technology assets, an excessively strong IP regime can impede the transfer of technology to developing countries.

## IP AND DEVELOPING COUNTRIES

The impact of IP on technology diffusion depends upon a country's circumstances.[27] From a developing country perspective, often weak IP favours technology transfer. Most of the developing countries, including India, China, Korea, Brazil, etc, used imitation and reverse engineering as a method for the diffusion of technology. In 1970, IP protection in Korea was weak. The Korean market was comparatively small, and their companies copied and imitated technology that was available cheaply or that was available in the public domain. Korea was a low-wage economy producing labour-intensive products. The government encouraged the export and development of technical and engineering skills through education. The success of industrialisation in Korea naturally increased the wages of labour, making low-cost production less viable, and this forced the economy to shift towards a creative imitation.

Rather than imitating, G companies started to create and innovate. By that time, Korean companies started to modify and improve imported technology rather than just copying. Because of this, the foreign firm started to see Korea as a competitor and refused to share technology without proper licensing and IPR. From 1987 to 1993, Korea improved its IP laws and attracted more FDI licensing. A similar trend can be seen in countries like Brazil, Mexico, Malaysia, China, and India, where they had limited IP protection initially. Firms in these countries relied on limitations and adapting foreign technology, and this strategy helped them in rapid industrialisation and economic growth. As these industries mature, they move beyond imitation and shift towards more advanced knowledge-intensive production processes.

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[26] *Ibid*

[27] Falvey (n 3)

During the early stage of their industrial growth, developing countries tend to prefer limited protection, because that would enable them to freely imitate imported technologies. As they develop, however, they should become increasingly interested in tightening IPRs, both to attract the most advanced technologies and to encourage their innovation.[28]

## TRIPS AND TECHNOLOGY TRANSFER

Critics argue that the TRIPS Agreement primarily benefits large corporations and wealthy nations by giving them stronger control over patents, copyrights, and trademarks. [29]The preamble of the TRIPS provides for the principal objective, which is to reduce trade distortion and impediments to international trade, and that consists of international technology transfer promotion. Although the preamble of TRIPS does not explicitly mention technology transfer, it indirectly encourages technology transfer. The fifth and sixth recital of the preamble to TRIPS refers to technology transfer indirectly. The Sixth recital recognises that least developed countries shall deploy maximum flexibility in their IPR to benefit from foreign technology transfer. However, this maximum flexibility has to be read in the light of binding obligations undertaken under TRIPS. Accordingly, in practice, though provision for flexibility is provided on one hand, TRIPS places a lot of restrictions and obligations upon the member countries, limiting the scope for policy discretion in many areas.[30]

Another significant provision under the TRIPS agreement is Article 7,[31] which outlines the objectives of the TRIPS agreement. Article 7 is widely regarded as one of the most flexible provisions under the TRIPS agreement, affording substantial scope for interpretation. Article 7 states that IP protection should promote both innovation and the transfer of technology. The key question lies in how individual countries choose to interpret Article 7. A developed country may adopt a narrow market-mediated perspective, viewing technology transfer happening through formal market-based mechanisms, through FDI, Licensing, etc. In contrast, a developing country may interpret Article 7 more broadly, advocating for IP laws that allow greater flexibility to encourage technology transfer through informal means such

[28] Maskus (n 8)
[29] Tu Thanh Nguyen, *Competition Law, Technology Transfer and the TRIPS Agreement: Implications for Developing Countries* (Edward Elgar Publishing 2010)
[30] Maskus (n 1)
[31] Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement 1994, art 7

as imitation. Many developing countries believe that, notwithstanding the balance sought in some provisions, the TRIPS Agreement primarily favours technology-rich countries[32].

The implementation of TRIPS affects the transfer of technology unevenly across countries. On one hand, it provides provisions encouraging technology transfer, while on the other hand, it places restrictions and obligations that impair the capacity of recipients in the developing country to gain access to and pay for the needed technology. The effectiveness of every flexibility provided under TRIPS for the promotion of technology transfer depends on how each country interprets the flexibility. In my opinion, TRIPS favoured the interests of technology owners rather than technology seekers.

## CONCLUSION

Transfer of technology essentially requires the willingness of technology owners to share the technology, and that requires the technical and financial capacity of the recipient nation to put it into commercial operation. These conditions cannot be guaranteed by National or international law alone.[33] In practice, the principal determinants of technology are predominantly market demand, infrastructure facilities, trained workforce, government policy, etc, rather than the strengths or weaknesses of IPR.IP plays only a limited role in promoting technology transfer. In fact, from a developing country perspective, strong IP is hindering technology transfer. Technology flow happens even in the absence of IP as well.

The TRIPS agreement, though drafted to promote technology transfer, in fact, at many instances operates as a hindrance to technology transfer. The problem of access to technology in a developing country seems today more problematic compared to a situation where there was limited IP. Measures such as strengthening technical and infrastructure facility, supports through financial assistance, improving skills and expertise of workforce through education and training, utilising maximum TRIPS flexibility, enacting government policies favouring technology transfer in host country, providing favourable situation for local manufacturing etc may be more effective in promoting technology transfer to a least developed or developing country than an exclusive emphasis on creating strong IP regimes.

[32] Correa (n 18)
[33] Correa (n 4)

Nevertheless, the importance of IP should not be undermined, as it is necessary to protect the technology and incentivise further development. However, we cannot assert that IP promotes increased technology transfer to developing or least developed countries as claimed by many, but certainly, it is one among the factors that influence the transfer of technology.