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# Patents as a Yardstick for Economic Growth: Case of Indian R&D System

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## Abstract

The novel creations by humans were well appreciated and acknowledged, but there exist several lacunae such as illegal copying. These malpractices were high and went on without restrictions. Moreover, with the passage of time, the significance of innovations and applications and their protection, both, increased. The fast-changing pace of global trades and business practices has given rise to a global cutting-edge competition and short product cycle with rapid changes in technology. This competition has laid a great responsibility on Research and Development (R&D) to build new ideas—creating an Intellectual property (IP). It is also said that that is an idea “owned” by an individual or company and is therefore protectable under the law. IP law aims at encouraging innovation by giving the creators of new ideas ample time to profit from their ideas and recuperates their development costs.

**Keywords:** economy, India, intellectual property, patent, R&D

## 1. Introduction

Intellectual property (IP) includes rights to literary, artistic, inventions in all fields of human endeavor, scientific disclosures, industrial designs, trademarks, commercial names, etc. IPR can be held only by legal entities, i.e., who have the right to sell and purchase a property. IP allows the creators/owners of patents, trademarks, or copyrighted works to get benefits from their creation. Such rights are outlined in Art. 27 of the Universal Declaration of Human Rights, which provides for the right to benefit from the protection of moral and material interests resulting from authorship of scientific, literary, or artistic productions [1] (**Figure 1**).

## 2. IP rights at a glance

Intellectual properties denote novel makings of brain like invention, literary and art works, symbol(s), name(s), images, etc. generally seen in business. Intellectual property is categorized as follows:

Industrial property	Patents, trademarks, industrial designs, geographical indications
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Copyright and related rights	Literary works—novels, poems and plays; films, music, art works (e.g., drawings, paintings, photographs, and sculptures) and architectural design. It also includes performances, recordings, and broadcasts
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**Figure 1.**  
*Kinds of intellectual property rights.*

**2.1 Patent**

Patent—an exclusive right given for an invention(s), which may be a product or a process. To get a patent, technical information about the invention must be disclosed to the public in a patent application. This right is provided for 20 years to the inventions which prove novelty, inventive step, and industrial application.

There are inventions which are non-patentable which are well described (*u/s* 3 a of Indian Patent Act 1970) [2]:

- Anything frivolous
- Contrary to law/morality or injurious to health
- A mere discovery of scientific principles, formulations, theories, etc.
- A mere discovery of a new property of a known substance
- Substance obtained with mere admixture resulting only in aggregation of properties of components
- A mere arrangement/rearrangement/duplication of known devices
- A method of agriculture or surgical entity

- Any process of medical, surgical, curative, prophylactic diagnostic, therapeutic, or other treatment of human beings or processes similar to the treatment of animals to free them from disease
- Plants and animals as a whole or any parts thereof other than microorganisms
- Mathematical or business methods or computer programs
- Literary, dramatic, musical, or artistic work or any esthetic creation
- A presentation of information
- Topography of integrated circuits
- Inventions related to atomic energy

## 2.2 Copyright and related rights

Copyright/author's rights—A legal term to describe the rights conferred for novel literary and artistic works created by an author/creator. Inventions that come under copyrights include books, musical compositions, portraits, films, computer programs, information databases, commercial advertisements, geographical maps, technical drawings, etc. Exhaustive lists of works covered by copyright are usually not to be found in legislation.

The two kinds of rights covered under copyright include:

**Economic rights:** It allows the owner to produce monetary rewards from the application of respective works

**Moral rights:** It protects the non-economic interests of the author(s).

The economic rights the owner of a work can exclude or allow:

- reproduction in any form
- public performance (play or musical work)
- recordings
- broadcasting
- translation into other languages
- adaptation (novel into a film/screenplay)

The Berne Convention is a landmark in copyright protection, where the copyright is granted automatically without registration. Most of the nations have a systematic structure for the registration of innovative works. Such registration arrangements can assist in resolving disputes over ownership or creation and facilitate the financial transactions and/or transfer of rights [3].

## 2.3 Trademark

A trademark is a “distinctive sign” that identifies certain goods or services as those produced or provided by a specific person or enterprise. Trademarks may be obtained for the brand name of a particular product or service.

The significance of trademark is mentioned as follows:

- i. TM projects the actual origin of goods and services.
- ii. It guarantees the identity of the origin of goods and services.
- iii. It stimulates further buying tendencies.
- iv. TM acts as a badge of loyalty.
- v. It may enable consumer to make a lifestyle or fashion statement.

## **2.4 Registered design rights**

Industrial designs constitute the esthetic aspect of designs. It comprises of 2D and 3D structures of articles. The owner of registered design rights prevents others from making, selling, licensing, and importing or copying the designs. The industrial design concerns more the aspect and esthetic of the device and also in the life sciences and biotechnology field.

## **2.5 Geographical indications**

The geographical indications (GIs) are the signs used on the products that have some specific place of origin. The quality and characters of a product must be essentially due to its place of origin. It includes agri-products, foods, alcoholic drinks, handicraft items, and industrial products.

## **3. Implication of World Intellectual Property Organization (WIPO)**

Established in 1970, the World Intellectual Property Organization (WIPO) is an international organization that ensures the maintenance of rights of inventors and owners of intellectual property worldwide, and they are appraised monetarily for their originality [4]. This international agency is recognized as an agency fostering creations of innovators, thus assisting the scientific world and literature. WIPO provides an edge to the dynamic industrial world by facilitating several revolutionary measures to international trade. WIPO acts meticulously with its member nations toward a guarantee that intellectual property system remains firm and in the benefit of IP assets across the globe.

Intellectual property (IP) rights are recognized as the yardstick of techno-economic growth of the country. This is because IP is directly proportional to the R&D divisions of the economy. Patents are a critical competitive arm in this cutting-edge competition, and a huge investment is needed for promoting and nurturing IP. Envisaging such facts, government's role, and initiative for an exhaustive environment are needed which would encourage innovation and commercialization [5]. In short, the economic benefits of the patent system are derived from its roles in promoting innovation and encouraging investment, economic growth, knowledge sharing, and the efficient use of resources.

In 1994, the General Agreement on Tariffs and Trade (GATT) conducted the Uruguay Round for international trade negotiations in line with Trade-Related Aspects of Intellectual Property Rights (TRIPS). Substantially, the member nations of World Intellectual Property Organization (WIPO) in 2000 agreed with the Patent Law Treaty. TRIPS transformed the regulation and the Patent Law Treaty, which primarily focused on rationalizing the procedural reforms.

WIPO is an organization for intellectual property (IP) services, policy formation and implementation, etc. This agency of the United Nations is supported by 192 member states. WIPO is established with under mentioned committees:

**i. The governing bodies:**

- i. The WIPO General Assembly and member states of each union (e.g., the PCT Union Assembly)
- ii. The WIPO Coordination Committee
- iii. The WIPO Conference

**ii. The permanent committees:**

- i. Program and Budget Committee (PBC)
- ii. Committee on Development and Intellectual Property (CDIP)
- iii. Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (IGC)
- iv. Advisory Committee on Enforcement (ACE)

**iii. The standing committees:**

- i. Standing Committee on the Law of Patents (SCP)
- ii. Standing Committee on the Law of Trademarks, Industrial Designs, and Geographical Indications (SCT)
- iii. Standing Committee on Copyright and Related Rights (SCCR)
- iv. Committee on WIPO Standards (CWS)

## **4. India and IP system**

India is a significant member of World Trade Organization (WTO) from 1995. It was a connection established to establish harmonization with IP standards [4]. The country signed different pacts to be included with:

- The Berne Convention, Copyrights Act, and Information Technology Act, 2000
- Patents: India's Patents Act of 1970 and 2003
- Industrial designs Act, 2000
- Geographical Indications of Goods Act, 1999

The National Intellectual Property Rights Policy is established in compliance with WTO's (World Trade Organization) agreement on TRIPS (Trade Related aspects of IPRs) aims to sustain entrepreneurship and to enhance the capabilities of Make in India program.



1947	Patent and Designs Act, 1911
1995	Indian—WTO pact
1998	India—Paris Convention (PCT)
1999	Patent Amendment Act
2005	Patent Amendment Act
2013	India—Madrid Protocol
2016	Indian IPR Policy

This activity aims at establishing a fact that IP is an asset and it promotes innovation and encourages entrepreneurship across the society. This organization also aims to ensure proper review, awareness, and enforcement of IP Laws [6].

5. Impact of IP and economic growth of country

Every year, WIPO IP Statistics Data Center publishes the statistics of IPs on varied grounds that project the innovation index of countries on varied basis. The key indicators for the assessment include:

- a. Total applications
- b. Applications by residents and non-residents
- c. Applications by regions
- d. Applications by income groups
- e. IP rights in force
- f. Patent—applications for the top 20 offices
- g. Patent—Applications by filing route: direct and PCT system
- h. Utility model—applications for the top 10 offices
- i. Trademark—application class counts for the top 20 offices
- j. Trademark—application class counts by filing route: direct and Madrid System
- k. Industrial design—application design counts for the top 20 offices
- l. Industrial design—application design counts by filing route: direct and Hague System

6. Research method

In this study, the analysis of patents’ productivity was carried out using data from WIPO. The Total Patents Filed (*direct and PCT entries*) and Total Patent Grant (*direct and PCT entries*) were taken and analyzed for the year 2012–2017.

Patent Office	2012		2013		2014		2015		2016		2017	
	Filed	Granted	Filed	Granted	Filed	Granted	Filed	Granted	Filed	Granted	Filed	Granted
China	652,777	217,105	825,136	207,688	928,177	233,228	1,101,864	359,316	1,338,503	404,208	1,381,594	420,144
North America	578,100	275,000	606,400	301,700	614,300	324,400	626,400	320,600	640,300	329,500	642,000	342,900
United States of America	542,815	253,155	571,612	277,835	578,802	300,678	589,410	298,407	605,571	303,049	606,956	318,829
Europe	345,900	159,100	346,000	161,900	346,300	161,800	360,200	165,400	354,900	195,900	355,700	203,600
Japan	342,796	274,791	328,436	277,079	325,989	227,142	318,721	189,358	318,381	203,087	318,479	199,577
Republic of Korea	188,915	113,467	204,589	127,330	210,292	129,786	213,694	101,873	208,830	108,875	204,775	120,662
European Patent Office	148,560	65,665	147,987	66,696	152,662	64,608	160,028	68,431	159,358	95,956	166,585	105,645
Russian Federation	44,211	32,880	44,914	31,638	40,308	33,950	45,517	34,706	41,587	33,536	36,883	34,254
Lower middle-income	71,600	16,600	72,500	17,000	73,100	19,100	77,100	18,700	76,900	23,300	78,900	24,500
Canada	35,242	21,819	34,741	23,833	35,481	23,749	36,964	22,201	34,745	26,424	35,022	24,099
Australia	26,358	17,724	29,717	17,112	25,956	19,304	28,605	23,098	28,394	23,744	28,906	22,742
Germany	61,340	11,332	63,167	13,858	65,965	15,030	66,893	14,795	67,899	15,652	67,712	15,653
India	43,955	4328	43,031	3377	42,854	6153	45,658	6022	45,057	8248	46,582	12,387

Average no. of patents filing vs. granting (2012–2017)  
(Patent Office-wise)

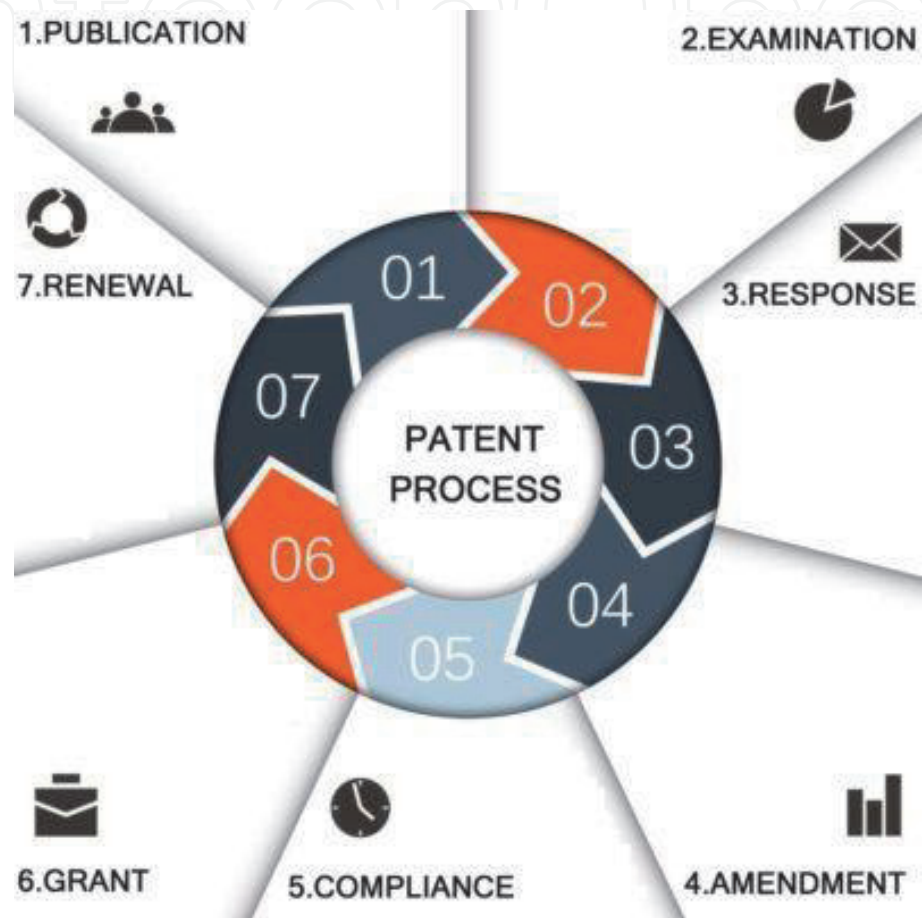
Patent Offices	Filed	Granted	%
China	1,038,009	306,948	30
North America	617,917	315,683	51
United States of America	582,528	291,992	50
Europe	351,500	174,617	50
Japan	325,467	228,506	70
Republic of Korea	205,183	116,999	57
European Patent Office	155,863	77,834	50
Russian Federation	42,237	33,494	79
Lower middle-income	75,017	19,867	26
Canada	35,366	23,688	67
Australia	27,989	20,621	74
Germany	65,496	14,387	22
India	44,523	6753	15

Average no. of patents filing vs. granting (2012–2017) (year-wise)

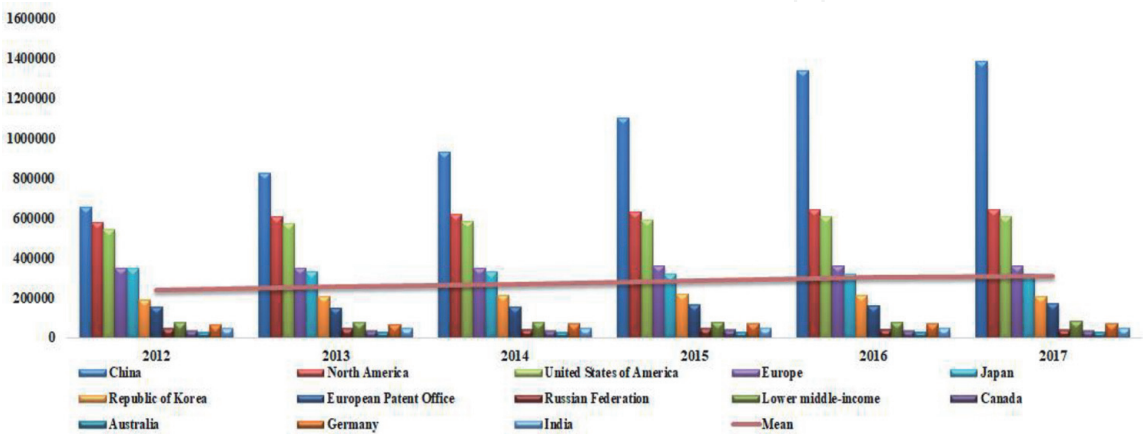
Avg. patent	2012	2013	2014	2015	2016	2017
Filed	237,121	255,248	264,630	282,389	301,571	305,392
Granted	112,536	117,465	119,918	124,839	136,268	141,922
Percentage	47%	46%	45%	44%	45%	46%



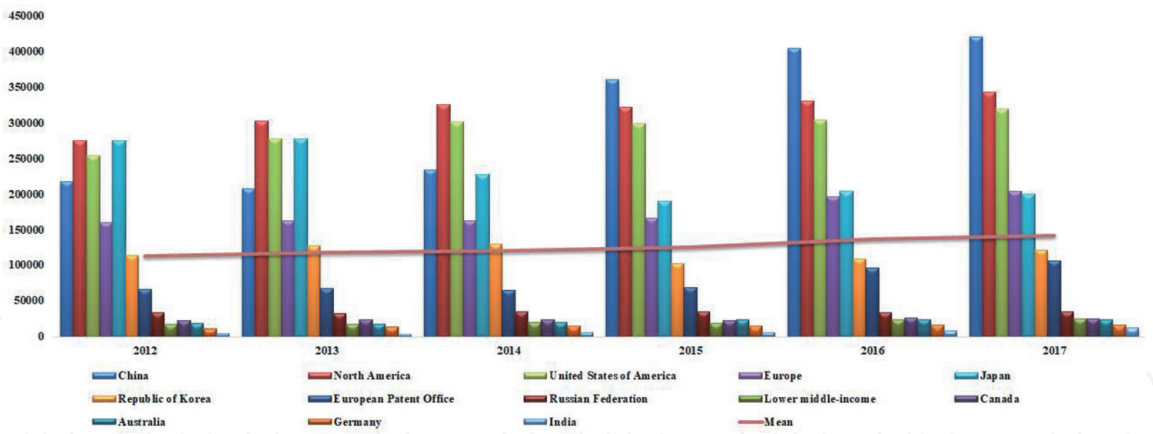
The above **Figures 2 and 3** clearly depict the state of countries with reference to filing and granting of patents. Considering the state of filing, China was the leading country among all, whereas North America, United States of America, and Europe were lagging behind. On the other hand, the patent granted state projects a similar picture, where China was again leading in patent granted. This figure shows that approximately 46% of the patent filed were granted. On analyzing the average no. of patents filing *vs.* granting (2012–2017), it was found that Russia was leading with 79% patent granted, whereas India was far behind with only 15% granted patents. It clearly shows the state of innovations and its commercialization (**Figure 4**).



**Figure 2.**  
*Patenting process.*



**Figure 3.**  
*No. of patents filed (2012–2017).*



**Figure 4.**  
*No. of patents granted (2012–2017).*

## 7. Conclusions

IPR is an important issue which raises a picture of innovation index and potential for commercialization of novel items. WIPO is an establishment that provides an edge to this regulatory system of innovation and legality. WIPO generates information regarding different kinds of IPR and their data with reference to fining and granting. This brief study provides an insight to the current state of patents (filed and granted) and their implication on globalization. In public, especially the innovators, the knowledge of IPR should be provided which would act as an act of mentoring them. It would provide the scope for protection of IPR and thus will create an avenue for protection of IPR and commercialization. This way, such activities would lead the country's economy with a fast pace.

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## Conflict of interest

There is no conflict of interest.

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