



## Relative Innovation Index: State of Patent Examination in India

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*Received: 13<sup>th</sup> September 2020; accepted: 3<sup>rd</sup> August 2021*

For the second decade in the 21<sup>st</sup> Century, the encouraging steps taken to foster the innovation environment in India have started bearing fruits by way of the introduction of new indigenous technologies<sup>1</sup> in the market, specifically in the area of generic medicines as well as in engineering sectors with automotive as a prime example.<sup>2</sup> Several initiatives<sup>3</sup> have been taken by the Government of India (GOI) to increase Research and Development (R&D) activity in India, for example, in providing tax holidays and exemptions have resulted in the development of indigenous technologies and increased patent filing. However, the prime concern now is to handle such a large number of patent applications and disposal of patent applications by the Indian Patent Offices. The author uses the empirical investigation to identify the motive of legal provisions in the Indian Patent Act, 1970 and employs a quantitative method of research to the data published by the Indian Patent. This paper evaluates the disposal mechanism in terms of a number of First Examination Reports (FERs) issued across various years by the Indian Patent Office and gives a performance indicator on its working efficiency. The study gives an overview of the Patent Prosecution Procedure for the disposal of patents in India. Also, the paper studies the disposal of patent applications by the four regional Patent Offices in India. The paper would focus on analysing the disposal of patents and its impact on the global innovation index published by the WIPO.

**Keywords:** Patent, Innovation Index, Indigenous Technology, Patent Disposal Mechanism, Global Competitive Report

The major initiatives and the encouraging steps taken to foster the innovation environment in India have started bearing fruits by second decade of 21<sup>st</sup> Century. Government of India initiatives like, introduction of new indigenous technologies in the market, specifically in the area of generic medicines as well as in engineering sectors with automotive as a prime example to increase R&D activity in India, for example, in providing tax holidays and exemptions have resulted in the increased patent filing. Some of the other initiatives include reduction of fees for start-ups and expediting patent prosecution timings for specific categories for applicants such as start-ups, government entities, and natural persons where one of the inventors is a woman.<sup>1</sup> India has achieved a decent growth in the innovation index when compared to its category and position in the level of the Indian economy. Additionally, the filing of patents has also emerged as an essential indicator for positioning any country, including India, in the innovation Index. Any measure that is undertaken by local government bodies to increase the patent filing and improve the

associated prosecution gives a helping hand in enhancing the relative positioning in the innovation index.<sup>2</sup> However, the prime concern now is to handle such a large number of patent applications and disposal of patent applications by the various Indian Patent Offices.

With the advent of globalization, open innovation has become the go-to solution maker for the current technical challenges (Rauter *et al.*, 2019). With the increasing complexities of systems involved in the development of new products and associated services, there is a growing number of overlap of individual technologies involved. For instance, any sub technology field in an electric vehicle requires not only the technical expertise in electrical engineering but also in-depth knowledge and understanding of mechanical, chemical, software, and electronics domain expertise. Similarly, in the field of medical technologies, a deep understanding of human physiology, as well as knowledge of robotics, mechanical, electronics as well as software, is increasingly required to remain meaningful in the increasingly competitive market. Thus, with the increasing complexity of such products and services,

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not only the related industry that gets affected, but the nation as a whole receives impact in terms of the development of the national talent pool and growth rate of its production and associated impact on the Gross Domestic Product (GDP).<sup>3</sup> Therefore, a continual innovation plays a significant role in determining the relative organizational health of an industry and, consequently, the state of innovation fitness of a country. The innovation potential of a country, thus, not only helps in retaining quality talent but also acts as a suitable measure for attracting high-level technical talent from other countries. Such potential of innovation is measured by various means (Imanov, Akbarov, and Aslanov, 2016) such as, the Global Innovation Index,<sup>4</sup> Global Competitive Index,<sup>5,6</sup> Knowledge-Economy Index,<sup>7</sup> and Innovation Union Scoreboard.<sup>8</sup> Of them, the most comprehensive study is the Global Innovation Index (GII) developed by the *WIPO*, *INSEAD Business School*, and *Cornell University*.

Global Competitive Report (GPR)<sup>9</sup> is published by the World Economic Forum and focuses on the level of prosperity provided by the countries to their citizens. The GPR is focussed on the parts of the economic growth that are not explained by growth in the factors of production. This focuses on the efficient use of units of labor and capital for generating output. The GPR primarily puts the Total Factor Productivity (TFP) as the unit of measurement. There are about 103 indicators classified under 12 units or 'pillars' which could be referred under the following figure

Figure 1 illustrates the "pillars" that are used for determining the GPR report. The performance of a country is reported on a scale of 0-100 scale, where 100 is the idealistic score. The relative scoring helps in identifying the competitiveness deficit that gives the indications of areas of improvement for productivity and living standards. The factors that influence the individual ranking of the participating country for achieving policy intervention towards more sustainable growth are:

- (i) Openness and international collaboration
- (ii) Carbon tax and associated subsidies
- (iii) Focus on incentives on R&D for green sources of energy
- (iv) Green public procurement for environmental friendly technical specifications

Additionally, the GPR also advocates policy intervention in the following areas:

- a. Increasing the quality of opportunities

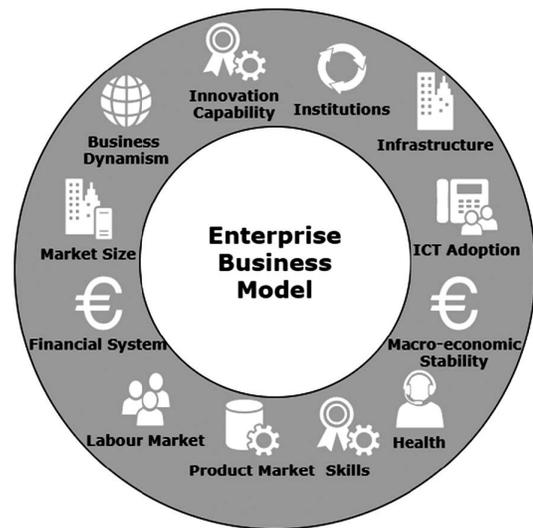


Fig. 1 — Pillars for GPR Report

- b. Fostering fair competition
- c. Updating tax systems and their composition
- d. Fostering competition enhancing investments.

The parameter that is used is pressed on how a country engages its resources in the most productive way to achieve sustainable and medium-term economic prosperity.

Knowledge-Economy Index (KEI), is used by the World Bank to measure a country's position with others in terms of the strength of its economy. The parameters in KEI are economical and institutional regime, education and human resources, the innovation system, and the level of information and communication technology. It primarily takes into account the effectiveness of the environment of the country is favorable for economic development. This index illustrates the level of economic and knowledge development of a country concerning each other. There are four "pillars" for determining the KEI index, namely:

- (i) The economic and institutional regime for providing motivations for efficient use of knowledge for creating a private enterprise in the country
- (ii) Educated and skilled population
- (iii) Efficient innovation system for creating new technologies
- (iv) ICT for facilitating the dissemination of information on a larger scale.

The certain initiatives by the Government of India which would help in sustainable growth and development are:

### **Enrolment for Facilitators for Start-Ups**

To promote patent filing activities for start-ups, GOI launched facilitators for filing intellectual property registration or grant in respective fields of patents, trademarks, and designs. In this scheme, only the statutory fees have to be paid by the start-ups, and the GOI bears the professional costs of the attorneys. Additionally, there is a reduction of fees for the start-ups for filing patents.<sup>10</sup> Both the measures will give an impetus to the inventors in such start-ups, but also the business managers involved to push for further innovation to reap in benefits for registering their innovations at appropriate forums.

Further, there is a mechanism for fast-tracking the application for specific categories of applicants in which there is a speedier patent prosecution available. Such actions help in creating a positive environment for start-ups for visibility in terms of a number of grants of patent applications, which gives a motive for further filing in patents for their innovations. This cycle leads to an inevitable increase in quality as well as quantity of patent filings in not only in the local jurisdictions but also in international authorities also.

### **Guidelines for Computer Related Inventions**

For better clarity on the patentability of Computer Related Inventions (CRIs), instructions were issued by the IPO in 2017. These guidelines not only take into the purview of the latest case laws on software patentability in India but also bring in the harmonization of patent laws, related to software and algorithm in India. Giving such guidelines provides clarity for inventors on CRIs for more extensive applications not only in India but also in other jurisdictions.

### **Fast Tracking of Patent Applications**

Fast-tracking or expedited examination of patent applications in India was introduced in 2018.<sup>11</sup> The criteria helped to prove India as a fertile ground for patent applications and asserting inventor rights. The fast-tracking of patent application prosecution or process is available for start-ups or if one of the applicants is a female inventor. Additionally, fast-tracking is also available for government organizations as an applicant. This is also supported in the discussed PPH for granted Japanese patent applications.

### **Simplification of Rules**

With the proposed changes in the draft rules for the IPO, various rules and regulations have been

simplified and being brought in with enthusiasm for providing smooth ground for patent filing activities in India for both Indian and foreign patent applications. Amendment in rules for providing PPH reduced fees, the expedited examination of patent applications, incentivizing PCT filing through own sources for funds for foreign filing is rights steps in a cardinal direction.

Based on the above study and analysis, the following gaps were identified:

- (i) There is no conclusive framework and study done on the actual quantitative output of the individual Patent Offices in terms of the number of patents applications processed over a period of time.
- (ii) Works of literature on Patent Office working and their efficiency survey, especially for India, are not imperative to their quantified output for a broad-based global comparison.
- (iii) There is no literature survey and quantitative study done on the actual work efficiency of the Indian Patent Office.
- (iv) The effect of Government's initiative on fast-tracking of applications, including studying the overall efficiency of the relevant examination verticals, has not been studied.

The methodology adopted for this study is qualitative and exploratory. The methodology employed for this study is a combination of a survey of literature having a focus on doctrinal research, having both qualitative and quantitative research design. The research data has been collected through the Indian Patent Office websites, the administrative records, and the annual report published by the India Patent Office. Exploratory research design has been used, and the qualitative inquiry mode is employed. This paper evaluates the disposal mechanism in terms of the number of First examination reports issued across several years by different Patent Offices of India and gives a performance indicator on their working efficiency. The paper analyses the relative strength of the examiners and controllers in various Patent Offices in India and interprets and evaluates the relative work efficiency of each Patent Office.

### **Working of Indian Patent Office**

For every patent application that is filed at the Indian Patent Office, either through offline or online mode, it goes through a series of procedures before its final disposition. Figure 1 illustrates a broader aspect of the workflow of the examination procedure at the Indian Patent Office.

Once the application is filed at the Indian Patent Office, it gets published after 18 months in the ordinary course of the waiting period and immediately in case of a request for early publication is filed (Fig. 2). Examination of the application is followed in due course in case of a request for examination is filed. While it notable that the examination of patents is rostered according to the date of the request for examination and not from the date of application. In other words, filing requests for examination early also helps in getting the patent processed early. Examination of the patent applications is conducted by the examiners and put up to Controllers of Patents for the issue of the first examination report (FER). Once the reply to the FER is received, it is studied and may be supplemented by a subsequent examination report (SER). The timelines for replying to the examination report is six months from the date of receipt of the FER. This may be extended by another three months by requesting under Form 4 of Indian Patent Rules, 2003. Basing on the reply and compliance to objections, patent hearing may be scheduled with the inventor or their attorneys by the Controllers of Patents. After that, the patent application is either granted or rejected on various grounds, as mentioned in the Indian Patent Act, 1970.

While various initiatives to increase patent filing activities in India have certainly given an impetus to increase the number of filings, its disposal figure provides a different picture of the underline stress the IPO is currently facing. Figure 3 illustrates the number of issuance of FERs from 2014 to 2019.

Figure 3 illustrates the FERs released from January 2014 onwards.<sup>12</sup> The data gives the inferences by considering 2014 as the base year, and there is a drop in issuing of FERs in 2015. The decline is in the tune of 6.25%, 30.42% and 11.98% for Delhi, Chennai, and Kolkata Patent Offices, respectively. However, there is an increase of FER issuance for Mumbai by a factor of 9.25%. The possible reason is about the lack of examiners *vis-à-vis* the number of patent filings at the Indian Patent Office.

However, there is a trend reversal for Chennai and Kolkata Patent Office, wherein from 2015 to 2016, there is an increase of 65.51% and 32.28% respectively on the issuance of FERs. However, the negative trend for Delhi and Mumbai continued to go downhill for 30.27%, and 51.10% drop in FER issued compared to the previous year. There is no consistency in the performance of the Patent Offices from 2015 to 2016. Additionally, there was a



Fig. 2 — Patent Disposition Flow at The Indian Patent Office

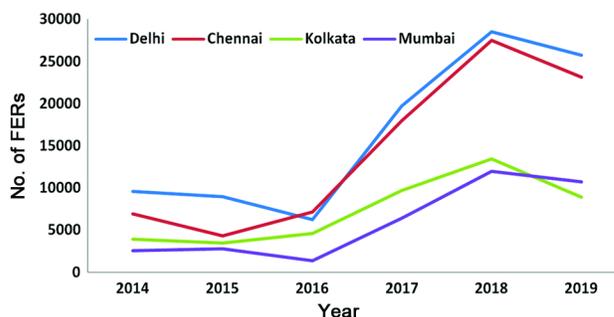


Fig. 3 — Number of FERs from 2014-2019  
(Source: Author's Compilation Using Dynamic FER Data Tool)

recruitment of about 192 examiners in 2015 for all Patent Offices. This step, among others, also pushed the output of all the Patent Offices in the next year (2016-2017). There was an increase of 215.5%, 151.42%, 109.55%, and 371.97% for Delhi, Chennai, Kolkata, and Mumbai Patent Office, respectively for 2017. The trend continued for 44.32%, 52.77%, 38.66%, and 87.32% for Delhi, Chennai, Kolkata, and Mumbai, respectively, for next year, i.e., 2018. This is a clear reflection wherein an increase in manpower positively impacted the Patent Office performance.

However, there was another round of recruitments in 2018 for 448 examiners in all the four Patent Offices. But the performance has been negative, especially for the Kolkata Patent Office, which is deficient of about 33% fewer FERs over the previous year. The strength of Examiners and Controllers for Kolkata (151) is next to the Delhi Patent Office (337); however, the number of FERs issued is least (8912) among all the Patent Offices. It gives an efficiency mismatch of the Kolkata Patent Office compared to the other Patent Offices of India.

The comparison of the efficiency of various Patent Offices has to be performed by considering the available resources and manpower for delivering various patent prosecution services.

Figure 4 illustrates the relative strength of various Patent Offices in India in terms of human resource availability at various Patent Offices.<sup>13</sup> The combined strength of Mumbai, Kolkata, Delhi, and Chennai Patent Offices is 60, 151, 337, and 140, respectively.

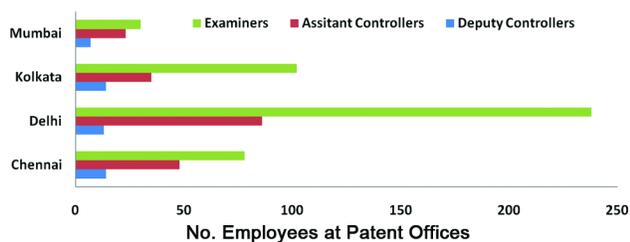


Fig. 4 — Human resource availability at Patent Offices of IPO (Source: Annual reports and Right to Information data)

While the strength of officers in the Delhi Patent Office is more than twice as that of the Chennai Patent Office, the issuance of FERs is almost on the same footing. For instance, Delhi issued 28,527 and 25,746 patent FERs in 2018 and 2019, compared to issuance of 27,520 and 23,154 FERs by the Chennai Patent Office. However, this inference of data gives an entirely different picture when the data is analyzed in terms of FER issued per person by various Patent Offices in 2018 and 2019. The data suggest that the FERs issued per person in 2018 for Delhi, Chennai, Kolkata, and Mumbai Patent Offices are 84, 196, 89, and 199, respectively. The data corresponding to 2019 for the four offices is 76, 165, 59, and 178, respectively. This suggests that of all the Patent Offices, the Mumbai Patent Office has the highest efficiency, followed by Chennai. The effectiveness of Kolkata and Delhi needs a lot of improvement in terms of their output. This is an overall scenario considering all the published data. However, individual Patent Offices have their strength in different technical domains that relate to particular functional areas corresponding to biotechnology, chemical, electrical/electronic, and mechanical domain, respectively (Fig. 5-8).

**FER Filling in Various Sectors- Trend Analyses**

The industry is the driver of the economy. The division of industry in sectors serves as an efficient ground for comparison for monitoring growth and development. Indian economy is volatile, and its various sectors contribute to this volatility differently. Patents filled in the sectors definitely tell the strength and further direct the R&D for it. The top sectors involved in the maximum filings in India are biotechnology, chemical, electrical/electronics, and mechanical engineering. The dynamic FER data published by IPO illustrates the sectors individually and their position concerning the issuance of FERs by the Indian Patent Office.

In the field of biotechnology, there were a total of 18,710 issuances of FERs from 2014 onwards.<sup>14</sup> The

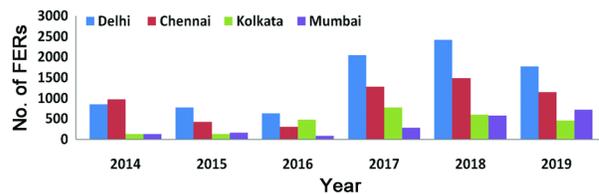


Fig. 5 — Issue of FERs in Biotechnology by the Patent Offices of India

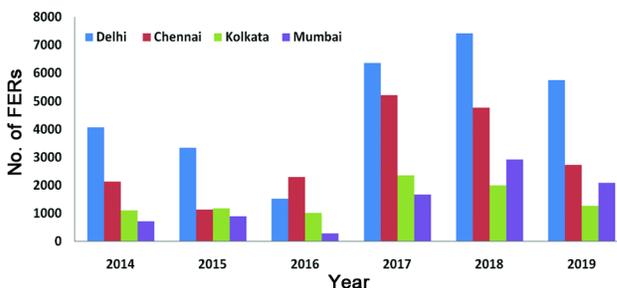


Fig. 6 — Issue of FERs in the area of Chemicals by Patent Offices of India

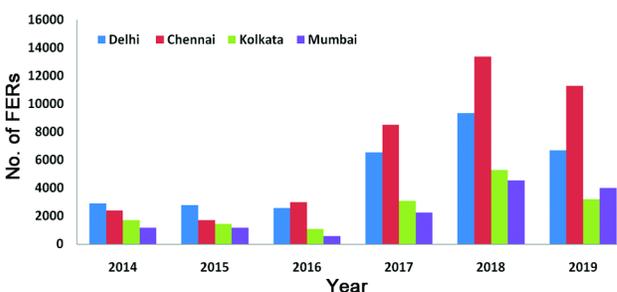


Fig. 7 — Issue of FERs in the area of Electrical/Electronics by Patent Offices of India

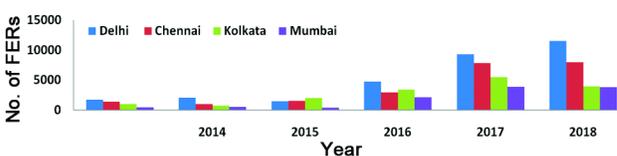


Fig. 8 — Issue of FERs in the area of Mechanical Engineering by Patent Offices of India

maximum numbers were from Delhi and Chennai that accounted for more than 75% of all the FERs issued during the time in the field of biotechnology. It could also be observed that the performance of the Mumbai Patent Office has increased compared to the Kolkata Patent Office in the field of biotechnology from 2018 onwards. The partial reason for this rise may be an increase in human resource availability at the Mumbai Patent Office. The Delhi Patent Office leads all the Patent Offices in the field of biotechnology by handling almost 45% of the cases related to

biotechnology, making it the preferred Patent Office for biotechnology patent applications in India.

From 2014 onwards, a total of 64,292 of FERs have been issued by Patent Offices in the field of chemicals and allied areas.<sup>14</sup> The maximum numbers were from Delhi and Chennai that accounted for more than 72% of all the FERs issued during the time in the field of chemicals. It could also be observed that the performance of the Mumbai Patent Office has increased compared to the Kolkata Patent Office in the field of biotechnology from 2018 onwards. The partial reason for this rise may be an increase in human resource availability at the Mumbai Patent Office. The Delhi Patent Office leads all the Patent Offices in the field of biotechnology by handling almost 40% of the cases related to chemicals. However, when observed with the available resources at various Patent Offices, the release of FERs on chemicals, the Mumbai Patent Office leads the pack with almost 48 and 34 FERs per employee on chemicals in 2018 and 2019, respectively. This is followed by 34 and 19 by the Chennai Patent Office, 22 and 17 for Delhi Patent Office, and 13 and 8 for Kolkata Patent Office, respectively. While the performance of the Mumbai Patent Office is highest among all the four, there is a concern on the output of the Kolkata Patent Office in the given field. The reasons could be either less number of relevant applications filed in the Kolkata Patent Office or lack of required technical persons in numbers or efficiency issues on dealing with the relevant area.

In the field of electrical/electronics and allied areas,<sup>14</sup> a total of 1,01,219 FERs were issued. The maximum numbers were from Delhi and Chennai that accounted for more than 70% of all the FERs issued during the period in the field of electronics. It could also be observed that the performance of the Chennai Patent Office has increased compared to the Delhi Patent Office in the field of electrical/electronics from 2017 onwards. The Chennai Patent Office leads all the Patent Offices in the field of electrical/electronics by handling almost 40% of the cases. However, when observed with the available resources at various Patent Offices, the release of FERs on electrical/electronics, the Chennai Patent Office leads the pack with almost 95 and 80 FERs per employee in 2018 and 2019, respectively. This is followed by 76 and 67 by the Mumbai Patent Office, 35 and 21 for Kolkata Patent Office, and 27 and 19 for Delhi Patent Office, respectively. The Chennai Patent Office is

the highest performer for the field of electrical/electronics in India, followed by Mumbai.

In the field of mechanical engineering and allied areas,<sup>14</sup> a total of 81,522 FERs have been issued by all four Patent Offices. The maximum numbers were from Delhi and Chennai that accounted for more than 65% of all the FERs issued during the period in the field of mechanical engineering. It could also be observed that the performance of all the Patent Offices apart from Kolkata is has remained consistent and wherein Delhi handles almost 37% of all FERs related to mechanical engineering. The performance of the Kolkata Patent Office has deteriorated in the meanwhile from 20% to 14.6% for the year 2018 and 2019. The Mumbai Patent Office leads all the Patent Offices with almost 64 and 63 FERs per employee in 2018 and 2019, respectively. This is followed by 56 and 56 by the Chennai Patent Office, 36 and 26 for Kolkata Patent Office, and 27 and 34 for Delhi Patent Office, respectively. The Mumbai Patent Office is the highest performer for the field of mechanical engineering in India, followed by Chennai.

Hence, the above trend analysis suggests that in the chosen sectors, namely mechanical, electrical, chemical, and biotechnology, various Patent Offices have different standing. For the mechanical sector, the Mumbai Patent Office has received the maximum applications. Whereas, in the electrical sector, the Chennai Patent Office has received the highest number of the applications. Delhi Patent Office has the highest application for chemicals as well as for the biotechnology sector. This trend analysis shows the comparative strength of the India Patent Office.

### **Relationship between GDP and Patent**

The empirical relationship between GDP, patent filings, and grants in India plays a significant role when we look at the growth rate (Fig. 9).

While there is almost a 50% increase in GDP of India from 2011 to 2018, the number of patent grants has improved by about 80% from the period of 2011 to 2018. The number of grants has been an important factor in determining the scores of GII. One of the reasons for this could be an increase in awareness of the local industry on the nuances of Patent Law and the benefits associated with securing such rights. Another reason could be the evolving nature of the Indian market, which has resulted from a gradual increase in prosperity of the Indian middle class, which has a direct relevance on the business turnover of the multi-nationals.

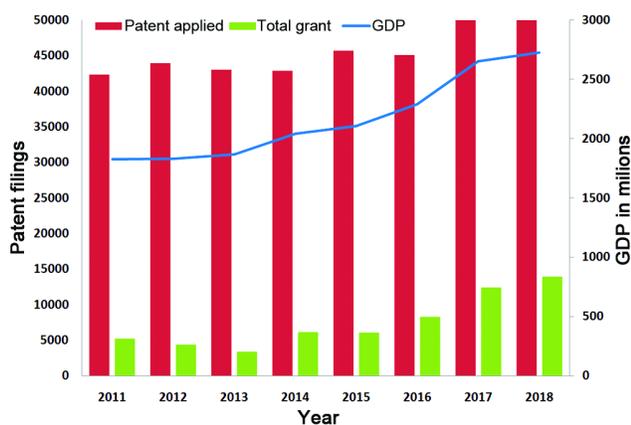


Fig. 9 — Effect of patent application and patent grant on GDP in India

(Source: World Bank GDP Report, WIPO Patent Statistics)

It is observed that of all Patent Offices, the Mumbai Patent Office leads to the technologies related to biotechnology, chemical, and mechanical engineering. In all the mentioned fields, Mumbai is followed by the Chennai Patent Office. For the field of electrical/electronic engineering, Chennai is followed by the Mumbai Patent Office. Objectively, evaluating the performance of various Patent Offices in India, considering the data from January 2014–November 2019, it could be concluded that Mumbai and Chennai Patent Offices are the most efficient Patent Offices in India. The reasons could be enumerated under:

- (i) Availability of well-trained human resources in the relevant regional areas; or
- (ii) Number of relevant applications being filed in the given Patent Office; or
- (iii) High efficient human resources with better motivation compared to other Patent Offices.

### Global Innovation Index

The factors that impact the global innovation index are illustrated in Fig. 10. The observations of the same could be enumerated as:

- (i) Institutions foster growth by promoting political stability and nurturing innovations. They create the basis of the economy and its growth.
- (ii) Education and research come under the purview of human capital and associated research and development. Spending in education, school enrolments, quality of education, R&D budgets, *et al.* play a significant role in forming the basis for considering the GII.



Fig. 10 — Framework for GII, Source- Global Innovation Index Database, 2019

- (iii) Industrial infrastructure for supporting the growth and promoting an equitable exchange of ideas, goods, and services are important for promoting the environment for innovation.
- (iv) Financial market support relates to the availability of credit and supportive environment for investment, competition, and scale of the market are important determinants in this sub-index.
- (v) Business sophistication refers to the index demonstrating how the local business is open to innovation. It relates to their susceptibility of training of the employees that is measured in terms of the ratio of their turnover, overall R&D spending as a percentage of GDP, etc.

The innovation output sub-index incorporates:

- (vi) Knowledge creation and diffusion include measurable parameters such as patents, journal publications, etc.
- (vii) Creative outputs index measures the number of trademarks, copyright, and design registration applications, factors such as the number of mobile app creations, Wikipedia additions, etc.

### Conclusion

Bringing uniformity in the efficiency and performance of all the Patent Offices is very much necessitated to create a better environment for ease of doing innovation in India, which will have a direct

impact on India's place on the Global Innovation Index. This could be achieved by following a multi-prong approach by:

- (i) Improving the overall training of the examiners and controllers at par with the IPF5 Patent Offices. In other words, the training program could involve an exchange of trainers and trainees with those of the US, EU, China, Korea and Japanese offices and exposing them to the best of the business.
- (ii) Bringing in performance incentive practices basing on the outcome of the examiners and controllers in terms of output of such examiners on examination of patents.
- (iii) Bringing in transparency in the examination procedure wherein there should be pre-examination discussions and meetings could be held on with the stakeholders to give a right search and examination strategy. Currently, this is not followed in India, and any such physical/oral interaction happens during the hearing stage only. The other avenue to provide the inventor inputs is in response to the FERs. Therefore, a formal interaction would help to provide a meaningful search as well as reduce non-essential directional work of the individual Patent Offices.
- (iv) Bringing in an optimum recruitment policy that commensurates with the number of patent filings by individual Patent Offices. Although there is a decentralization policy on the examination of patents, as observed from the mentioned graphs, there are few verticals that are overloaded with pending applications and some others that are not.
- (v) The basic idea of patent examination and evaluation of the application to the examiners comes during and after recruitment of such experts at the Indian Patent Offices. Most of the examiners have little exposure to the patenting procedure at the university level, which is evident from the number of overall filing in India. Bringing in a wholesome change and policy disruption, and not just policy correction, for patent and IP sensitization, at the school level itself would be a game-changer in the long run for the country.

Additionally, the Government of India has prescribed the National Intellectual Property Rights Policy intending to spur creativity and stimulate

innovation. Further, the Policy lays a roadmap for the future of IPRs in India. Also, for facilitating start-ups for intellectual property protection, a new scheme called Start-ups Intellectual Property Protection (SIPP) was envisaged for the protection of patents, trademark, and designs of start-ups. However, for an organization to remain competitive, the grant of patents is an essential step for maintaining an edge over the competition. As a result, the Controller of Patents has to spearhead on an emergency basis for clearing backlog of patents filed in various Patent Offices. Further, it is essential to improve the output functionality of Patent Offices such as Delhi and Kolkata to perform better in terms of better prosecution and processing of patents.

The delay in grant of patent applications not only impacts a macro view of the integration of IPR to a nation's economy, India in particular, and the world economy in general, but it also affects entrepreneurs as well as consumers by way of delaying access to new products. Further, it negatively impacts emerging technology areas where immediate protection is of utmost necessity. Emerging technologies are extremely centric towards protection and incubation at various stages of their product life cycle. Further, increasing patent backlogs in the relative Patent Offices lowers the quality of patents granted as they strive to clear patent applications owing to increased workloads. As the quality of patent application decreases, it creates an environment of more infringement and subsequent litigation, thereby initiating a cyclic low patent grant and infringement lawsuits. Further, with an increase in the number of patent examination staff, the gestation period of actually effective work increases owing to their training as well as orientation towards working of the Patent Office.

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