IP: An Asset and Enabler for Innovation in ICT

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Working Paper Background - A Focused Group Discussion

A multi-stakeholder discussion at the IIT Bombay

This paper is a result of a multi-stakeholder discussion held at the IIT Bombay on 6th of March, moderated by Prof. Kirti Ramamritham on “IP: An Asset and Enabler for Innovation in ICT”.

The participants comprised of representatives of the industry, industry associations, bilateral agencies, government as well as the academia, and legal professionals.

Acknowledging IP as an asset and hence enabler for innovation

The discussion aims to identify the role of the Information Communication and Technologies (ICT) sector in the context of India’s global positioning as an innovation economy. Acknowledging ICT to be the digital backbone of India’s economy, the crucial importance of mobile telephony as a catalyst for economic growth and social inclusion was highlighted in this context.

In light of the prominent notion ‘Innovation Economy’, the focus has also been set on research and innovation about the generation, protection and commercialisation of Intellectual Property (IP).

The discussion paper in this way portrays different perspectives on ICT and how it impacts the IP ecosystem.

The following report also aims to advance an understanding for the hurdles in innovation applied to the example of the ICT sector, and sheds light on potential ways to foster the IP ecosystem leading to the improvement of the quality and quantity of the intellectual property generated in India, as well as its monetisation.

Macroeconomic Perspective

In summary, the observations made during the course of the discussion strived to be made from a macroeconomic perspective in order to embed all relevant points in the current economic scenario for which various government initiatives, for instance, “Make in India”, “Digital India”, “Skill India” and “Start-up India” are essential enablers for innovation and growth.
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India’s Digital Backbone: The ICT Sector

India ranks 100th among 190 countries in the ease of doing business index\(^1\), a figure that may not look so promising by itself, but when seen as a jump 30 places up from the last year, this underlines the positive trend evident in other metrics, too.

The 139 billion contribution\(^2\) of the ICT sector to the Indian economy is considerable, given that this forms 11% of the absolute GDP value. The number of digitally connected smartphone users is significant, and there is a strong push for digitisation in the banking, healthcare, education, entertainment and government sectors. ICT thus forms the backbone of the digital infrastructure of the country.

![Figure 1: Estimated contribution of ICT to the Indian Economy (GDP)](image)

**High Demand for Digital, though Low Penetration**

Ironically, in spite of a large number of internet users, India is the least digitally connected country globally\(^3\). The internet penetration is merely 27%, and only 15% population has regular internet access\(^4\). Broadband connectivity subscriptions are just 5.5 per 100 households. The rural-urban divide is vast, with very minimal internet access in the rural areas. Therefore, mobile devices in their capacity as the digital connector and/or enabler for the telephonic exchange of information play a vital role in the Indian society.

**High Imports Despite Conducive Parameters for Local Manufacturing**

At the same time, India’s mobile market share amounts to 14% of the global market, having grown faster than the rest of the world in the last five years. Given India’s socio-economic

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\(^1\) *Doing Business 2018: Reforming to Create Jobs*
profile, consumers here, especially the rural population, are sensitive to the price as low-cost phones, priced below INR 10,000, are the most sought after. These kinds of phones can be manufactured locally with ease as the components used are not advanced. However, the local value addition in mobile manufacturing is only 6% as compared to 70% in China— the largest import market for India in this industry.

**Make in India supported by the Phased Manufacturing Programme (PMP)**

Given the afore-described imbalance between the local demand and the local on-site value creation, in 2016, the Government of India introduced the Phased Manufacturing Programme (PMP) to promote indigenous manufacturing of cellular mobile handsets. As per the guidelines of this programme, manufacturers of cellular mobile handsets can avail exemption from import duty and excise duty on imports of specific components. The target of this programme is to increase the local value addition to mobile manufacturing to around 32% by 2020 (refer Figure 1). The PMP has already seen some success regarding boosting the domestic production. It could be the right step towards generation of more jobs, saving foreign exchange, increasing export and encouraging an innovation culture in alignment with the objectives of “Make in India”.

![Figure 2: Projected Impact of the Phased Manufacturing Programme (2016-20) by IIM Bangalore & Counterpoint Research (2016)](image)

However, the importance of domestic manufacturing was recognised long ago. It started with India’s attempts to substitute imports by manufacturing locally from the 1960s onwards. The general belief was that by importing technology in the beginning, India could eventually adopt innovation and thereby become an innovator, which proved to be short-sighted.

Creating a conducive business environment along with incentives for manufacturing is today believed to be the remedy for enabling R&D through increased financial and strategic
relevance. In consequence, the investments in R&D for state-of-the-art solutions and technologies, like certain high-tech components for mobile networks or handsets, are to be retrievable through a robust IP ecosystem in which the value of IP can be leveraged through market-driven licensing models.

**Mobile Industry: A Potent Catalyst for Bridging the Digital Divide**

In this context, it was highlighted that increased manufacturing would have a positive impact on the end price of the handsets. Through the domestic creation of IP and its monetisation through market-driven royalties, the cost of technology can be recovered, which acts as an incentive for increased research and innovation. More importantly, this makes further investments attractive for IP owners. However, smaller players, like the local SMEs or start-ups, shall be included in this virtuous circle, the discussion proposed. The only way to assure them access to the innovation value chain is, apart from incentives and government schemes, the principal adherence to collaborative standards.

Collaborative standards are not only the prerequisite to India’s global relevance and acceptance as a leading economy, but also assure that incremental innovation, i.e. the adoption and gradual development of already existing standards resulting in state-of-the-art technologies, can be practiced. The example provided by the participants revealed that innovations like 2G, 3G, 4G, and soon 5G, are based upon this collaborative standard model through which a paradigm-shifting advancement in telecommunication and internet could be achieved. Another aspect was that standardisation enables the emergence of mass markets and economies of scales, which results in falling average selling prices.

**Handset Level Licensing Model to Assure Affordable Prices of End Devices**

In the context of the social significance of the mobile industry vis-à-vis the affordability of end devices, it was also noted that there was a need for IP owners and IP users to follow a handset-level licensing practice. It enables defining the royalty fee based on the cost of the end device, instead of applying royalties on a chipset level in order to avoid high transactional costs. The latter would have an adverse effect on the price of the end device. Considering the high price elasticity for demand in this industry, this would translate into a lower mobile phone
penetration and / or slower shift towards smart phones. In consequence, given the lack of adequate substitutes, the digital infrastructure would be weakened.

India, in general, is a very price sensitive market, in particular concerning mobile devices due to a relatively low per capita income and economic inequalities. Assuring affordable prices of end devices is hence essential to make mobile phones accessible for low-income groups, in particular, those in rural areas. This, in turn, can help to bridge the urban-rural divide through increased digital connectivity and therefore availability of information.

**ICT as an Enabler for Socio-Economic Progress**

Digital connectivity is spurring the process of reducing the urban-rural divide which is also being tackled and supported by various government initiatives. According to a study by ICRIER (2009), higher mobile phone density leads to faster (economic) growth of states, with the growth rate being 1.2 points greater for every ten percent of the population. It can be assumed that this impact has augmented over the years due to increased mobile penetration and the launch of smartphones. In consequence, the total direct economic contribution is estimated to be around USD 42 billion (1.8% of India’s GDP in 2015). What is more, the manufacturing value added (MVA), that is the value additions that are made by the mobile industry, amounts to 18.3%, exceeding the average of manufacturing industries by more than four percentage points, according to the Annual Survey of Industries (MOSPI). These value additions also translate into employment and increased access to information in areas like agriculture, health and education as well as government services.

It was also pointed out that targeted measures are being put in place at various government levels to improve the quality of life, e.g. policies and governance in the fields of employment, environment, health and education. These are aligned with attempts to improve infrastructure with better buildings, transport, water and energy management and efficient waste management contributing towards a higher quality of life. There is a contribution at the level of planning and design, and then there is informatics with various digital systems. But, most of these efforts on planning, design and development of digital support and tools happen independently, in buckets or silos.

Hence, there is a need for various agencies to come together and work together to achieve specific goals. They need to communicate and understand the language of each other. ICT will enable this and is the key to bringing all the efforts together.

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6 GSMA, 2016: The Mobile Economy India
Looking Beyond the Infrastructure: Creating High-Quality Content and Manageable Systems

The participants considered the example of smart cities and smart transport systems as examples of how ICT can solve real-world problems. Policies and planning for houses should be driven by an efficient supply of water, energy management and waste management. Crowdsourced data collections could be made functional through the use of mobile-based applications (apps) for surveys or complaints. In addition to surveys, apps could be used to handle queries in various fields like jobs, education, housing etc. Mobile apps are a great way to deliver updates.

While data, policies and planning need to come together, mobile-based apps will continue to be the focus. Bringing ICT along with the rest of the ecosystem is required but may also be challenging. Merely providing the infrastructure will not be enough to ensure the success of the system. It would be essential to convey how the infrastructure should be used, how it should be embedded in a long-term, holistic plan, and how it should be delivered to the people. All of this is underpinned by not only the question of IP but also data security.

Though mobile penetration and usage is high in India, the participants remarked that the content that is delivered over it lacks quality. The infrastructure may be good, but what is delivered using that, needs improvement in terms of scope as well as policy. It was therefore expressed that there is a need to undertake focused projects in content creation - not only in English but also in other regional languages.
Fostering the Innovation Ecosystem Through the Symbiosis of Academia and Industry

In the context of innovation, the academia and the industry have complementary roles to play. It is crucial that there are substantial interactions, collaborations, and sustained engagement between the two.

The enthusiasm in the industry to engage with the academia is evident by the sheer number of industries approaching educational institutes. However, only a few amongst them actually engage. Further still, a smaller percentage of those who engage come back for repeat projects. It was proposed that higher educational institutes need to explore the reasons for this and undertake measures to improve bilateral collaborations.

The discussions also highlighted that academic institutions need to pay more attention towards IP for the symbiosis between the research community and industry to flourish in India. Given that IP is a financially and strategically valuable (business) asset, industry representatives felt that their IP is not protected enough when they collaborate with academic institutions. If the academic institutes ensure that the IP environment is more secure than what it is today, participation from the industry could increase.

Patents: A Tool for Strategic Business Growth

The participants of the discussion observed that today, very few patents are filed in India as compared to China, the US, or Europe.

Apart from the protecting and commercialising IP, patents act as tools for strategic business planning and positioning. By accessing and screening patent databases, innovators can mitigate the risk of infringement and also explore technologies that could be licensed. As the number of patents filed increases multi-fold globally, the relevance of patents for strategic business decisions is augmenting, too.

Collaborative Models: The Relevance of SMEs in the Value Chain

Some of the participants identified particular advantages of the low number of patents filed in India, arguing that since there are only a few of them, the rest of the space would remain open for SMEs and the likelihood of infringement would automatically reduce. However, other delegates, representing bilateral bodies and multi-national corporates, put forward the concern that by not filing a competitively higher number of patents, the required sophistication of an IP ecosystem that is capable of (incremental) innovation would not be achievable. At the same time, it was projected that by excluding SMEs from the patents and standards system, the market(s) would be consolidated, leading to a higher concentration of market power and hence price control. In consequence, the role of SMEs and the importance of them being incentivised and encouraged to use patents more actively, and also to create them, was underlined.
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IP Protection: Creating a Robust IP Ecosystem spurring Innovation

In the course of the discussion, the increasing number of overseas filing, in comparison with the stagnant number of domestic filings, was referred to as an indicator for India’s capability and willingness to invent globally. The participants reiterated the concern that the overall R&D expenditure was low and the whole ecosystem was not robust.

Empowering major hubs of research and innovation, in likes of IITs and National Universities, by allotting special budgets for IP creation, could be one measure to overcome a certain degree of scepticism towards the costly and sometimes lengthy procedure of IP filing. The participants pointed out that filing patents pose a barrier due to costs and discouraging waiting periods involved in the process, and issues in enforcing them also imply both costs and time.

Innovation in the Era of the Fourth Industrial Revolution

Despite the different perspectives on IP, it was agreed that the protection of IP could lead to revenue streams based upon licensing models. In this regard, it was underlined that non-restrictive government regulations should offer enough autonomy to the licensor and licensee enabling increased transfer of technologies and collaborations. This, in return, contributes to the conduciveness of the business environment, leading to increased investment security and hence manufacturing. More manufacturing, according to the points raised during the discussion, will make India more competitive on a global scale.

Emerging technologies and software-based inventions, like Artificial Intelligence, pose a major challenge for the existing ecosystem given that current patent laws (Patents Act enacted in 1970) are not equipped to explicitly capture or respond to the particularities of solutions pertaining to the fourth industrial revolution.

Protectionist measures like “Form 27” as per Section 146 of the Patents Act, 1970, have been rejected to be inapt for today’s business dynamics due to complex patent portfolios, especially in the ICT space, in which more than one patent is registered for one product.

A sound legal infrastructure for adequate protection is underpinned by increased awareness and capacity in the field of IP at all levels - from pupils and students to innovators and entrepreneurs, to corporates and legal professionals to policy-makers, the legislative and the judiciary.

The review of patent applications takes up to three years. If the innovation itself is not relevant after that amount of time, there is no point in filing one because there is no benefit after that. Some innovations have a very short life, say a year. If the processing of patents takes three years, it is an injustice to the innovation.

In this regard, the Indian Patent Office’s (IPO) efforts to drastically decrease waiting periods by implementing a more efficient infrastructure and support have been acknowledged. To
make processing patents easier and quicker, utility patents law can help. Also, classifications of patents with fast tracks for short-lived innovations (petty patents) have been suggested.

**Encouraging Innovation Culture:**
The attempt of inculcating a culture of innovation will need integrated efforts from various sectors. Just advances in policies or government schemes may not be enough to ensure innovation. The required infrastructure and the education system need to be advanced towards more IP-centric R&D to make a complete innovation ecosystem.

As it may be impossible to start from scratch and compete with those who have been doing cutting-edge innovation, India could start with the existing technologies and do incremental innovations.

**Conclusion: India-made Innovation for Global Markets**
The ongoing efforts under ‘Make in India’ have shown some success, but India needs to do more to encourage innovation. The synergetic interplay among academia, industry and government (initiatives) is required to enable a flourishing innovation culture that is nurtured by domestic manufacturing leading to increased research and development and thereby IP generation. The example of the mobile industry and how it has been enabled to create more on-site value through the Phased Manufacturing Programme showcases the importance of industry-specific support mechanisms. What is more, the proposition for incentive-based approaches for SMEs and start-ups has been the highlight in light of their crucial importance for diversifying and enabling the innovation economy leading to increased global competitiveness.

India certainly has the potential to become a global role model for ICT-related inventions, though it needs to acknowledge the role of IP as the same constitutes the value retrieving asset in the value chain of any innovation.

Considering today’s opportunities as well as challenges, the relevance of bilateral collaborations has been emphasized. Consequently, it has been concluded that while India-specific models, incentives and innovations are required, the approach towards defining and achieving them shall be framed with a global perspective: India-made innovation for the world.