

Patent Assertion Entities (PAEs) in India: A Critical Study of Regulatory Frameworks and Enforcement

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Abstract: Patent Assertion Entities (PAEs), often referred to as 'patent trolls,' buy up patent inventions to create a revenue stream from licensing, rather than commercialising them, through threat of litigation. This practice is a fundamental transformation and imbalance in the global innovation ecosystems. The paper compares the PAE phenomenon in the developed economies of the United States, Germany, Japan and United Kingdom with that of some developing economies such as China, Brazil and South Korea and explores the implications of the comparison for India. This study, based on empirical evidence from the last 24 years (2000-2024), identifies staggering cost the PAE-related litigation has had on the global economy at USD 29-80 billion per year. It is noteworthy that over 60% of all U.S. patent litigation are now involving non-practicing entities (NPEs). The paper reviews 5 key cases and discusses the legislative and judicial response in various jurisdictions to come up with a policy plan for the patent ecosystem in India. Finally, the paper suggests specific amendments to the Patents Act 1970 and proposes the introduction of 'fee-shifting' mechanisms, as well as FRAND reform of the regulatory framework and improved international cooperation in the development of patent quality standards.

Keywords: Patent Assertion Entities, Non-Practicing Entities, Patent Trolls, Patent Litigation, Innovation Policy.

Introduction

Traditionally conceived as a social contract between inventors and society the patent system grants temporary exclusive rights in exchange for public disclosure of inventions. However, this has undergone fundamental transformation in the 21st century. The growth of patents, particularly subsequent to the establishment of the U.S. Court of Appeals for the Federal Circuit (CAFC) in 1982 and further the software patent boom, facilitated the emergence of a new class of market participant that derive value not from invention or commercialisation, but from strategic acquisition, management and enforcement of patent rights.

These entities described as Patent Assertion Entities (PAEs), Non-Practicing Entities (NPEs) or colloquially '*patent trolls*' constitutes a heterogeneous group of market participants ranging from individual inventors asserting legitimate rights to specialised investment entities that acquire patent portfolios with the primary object of monetising them through licensing and enforcement. A study conducted Bessen and Meurer in 2014, estimated that PAE litigation cost defendant firms over USD 29 billion in 2011 alone. When direct litigation costs, business diversion and innovation related impacts are taken into account, the cumulative costs are estimated to have exceeded USD 500 billion since 2000. [1].

Related Work

The binary classification of entities as NPE and practicing has been recognised by modern academic literature. Chien (2012) suggested a five-category taxonomy that distinguishes individual inventors, University technology transfer offices, unsuccessful start-ups, defensive patent aggregators and pure-monetisation funds. [2]. The key difference is not whether an entity does or doesn't practice the patent, but whether there's an economic purpose for asserting it. According to Lemley and Meurer (2013) the primary effect of the activity of PAEs is to shift wealth from operating companies to patent monetisation companies, not to incentivise actual innovation. According to their study, companies that face PAEs suffered an estimated USD 83 billion in losses in the stock market, while PAEs generated only estimated USD 6 billion in licensing revenue, suggesting a significant loss to the economy. Additionally, Cohen, Gurun and Kominers (2019) found evidence that PAEs tend to favour financially healthy companies, regardless of the merits of the alleged infringement. They found that, from an empirical perspective, for a one standard deviation rise in cash holdings, the probability of a lawsuit was raised by about 7.4%, which suggested that the defendants' financial capacity affected litigation tactics, not the quality of infringing claims. [4].

Method, Experiments and Results

The research method used in this study is doctrinal and comparative research, with the source of information in this research is Patent Litigation Databases (Lex Machina, PatSnap), laws, judicial decisions, government reports and empirical studies published in peer-reviewed journals. The temporal scope is 2000–2024 and five landmark case studies have been identified that represent various typologies and geographies of PAE.

Global PAE Activity: Statistical Overview

The geographic pattern of PAE activity is reflective of the ‘jurisdictional attractiveness for assertion’.

The below table provides the latest complete overview of patent situation in key patent jurisdictions.

Jurisdiction	PAE Cases (2022)	% of Total Patent Litigations	Avg. Settlement (USD)	Avg. Duration (Months)
United States	3,847	67%	\$420,000	28
Germany	312	18%	€180,000	18
United Kingdom	89	12%	£220,000	24
Japan	156	9%	~\$180,000	32
China	234	4%	~\$110,000	14
India*	12	<2%	Est. ₹1.5 Cr	36+

*Table 1. Global PAE Activity by Jurisdiction (2022). *India figure represents documented cases; actual activity through informal threats is estimated to be significantly higher. Sources: Lex Machina 2023; EPO Patent Litigation Report 2022; IPO Annual Report 2023.*

Comparative Jurisdictional Analysis

The United States

The United States considered to be the origin of the modern PAE phenomenon and it offers the most fully documented case study of legislative and judicial reaction to the emergence of the PAE phenomenon. The

enactment of the Leahy-Smith America Invents Act (AIA), 2011, was a major legislative reaction; namely with the introduction of the Inter Partes Review (IPR) mechanism. The effect of this reform has been dramatic, with the Patent Trial and Appeal Board (PTAB) receiving 12,847 IPR petitions between 2012 and 2023, and about 84% of the patent claims being cancelled or amended. Moreover, the estimated cost of an IPR proceeding ranges from USD 30,000 to USD 100,000, making it a significantly more cost-effective alternative to full patent litigation.[5]. The decision of the Supreme Court's in the year 2014 in Alice Corp. v. CLS Bank International nullified approximately 65% of software patent claims challenged under Section 101, drastically limiting the strategic value of broad software which had constituted the principal asset of tech-sector PAEs.

Despite these reforms, the continued application of U.S. 'American rule' under which, each party bears its own litigation costs continues to incentivise nuisance suits by reducing the financial risks associated with unsuccessful claims. NPEs deliberately demand settlements slightly lower than anticipated legal expenses, making settlement the economically rational choice regardless of patent validity. The NTP Inc. v. Research in Motion (BlackBerry) case is a classic example of this practice. NTP secured a USD 612.5 million settlement although, all of its patents were subsequently invalidated during USPTO re-examination, reiterating that the cost and risk of litigation often drive settlements more than the merits of the patent claims. [6].

The European Union and Germany

The EU presents a less favourable environment to PAE activity. Its 'loser-pays' litigation cost regime and prohibition of contingency fees diminish the financial incentives underlying the PAE litigation model. Germany's bifurcated approach where infringement and validity are adjudicated independently was historically provided PAEs, with an opportunity who obtain injunctions long before validity challenges were resolved. Germany's Patent Law Amendment Act, 2021 formulated a proportionality requirement for injunctions (Section 139 PatG), limiting the ability of PAEs to exploit the threat of injunctions. The UK's Intellectual Property Enterprise Court (IPEC), established in 2013, imposes a limit on recoverable costs at GBP 50,000 on GBP 50,000 on damages, measures that have been associated with a 34% reduction in PAE settlement demands against UK technology SMEs. [7].

India: Structural Deterrence Framework

India's Patent enforcement regulatory framework incorporates several structural safeguards that discourages NPEs activities without enacting any dedicated 'anti-troll' legislation. These safeguards are:

- Section 83 (General Principles): requires that patents must serve public interest rather than creating monopolies, thereby directly weakening the PAE 'hoard-and-sue' model.
- Section 84 (Compulsory Licensing): Provides for compulsory licensing when a patent is not commercially exploited for three years, which means that PAEs would have to produce the product or face the loss of the patent.
- Section 146 (Working Requirement): requires annual statements of commercial working, which will reduce the viability of the passive patent-holding approach, which is a common part of PAE operations.

- There is a time limit of 12 months in which to file a post grant opposition under Section 25(2) and there is no presumption of validity under Section 13(4). Allows opposition within a year of grant and brings no presumption of validity under Section 13(4) thus creating an onus on the patentee.

The effectiveness of these provisions can be seen from the judgment in *Spice Mobiles Ltd. & Samsung India v. Somasundaram Ramkumar*. In the case, the IPAB has cancelled a patent on dual-SIM technology on the ground of lack of novelty and imposed costs on the entity asserting the patents due to frivolous litigation. The IPAB in *Aditi Manufacturing Co. v. Bharat Bhogilal Patel* has recognised the presence of a prior art in this case to revoke patents targeting commercial entities. The decision of India not to make software patentable (Section 3(k)), significantly restricts the potential of software-based patent assertion by the PAEs.

The framework has a number of strengths; however, it does have certain weaknesses. By giving a temporary safe nest in which a PAE can obtain a patent and then file an infringement lawsuit against a rising start-up for 3 years before compulsory licensing, the three-year waiting period allows the PAE to avoid the immediate need for compulsory licensing.

Landmark Case Studies

Based on the typologies and geographical contexts, relevant to India, five cases were selected:

Case	Jurisdiction	Settlement/Outcome	Key Lesson
NTP Inc. v. RIM (BlackBerry)	U.S. (E.D. Virginia)	USD 612.5M settlement; all NTP patents later rejected by USPTO.	The threat of injunctive relief incentivises defendants to settle for amounts exceeding the likely merits of the dispute, even where patent validity remains uncertain.
Vringo/FORM Holdings v. ZTE	U.S., Germany, UK, Malaysia	USD 21.5M global settlement; litigation costs exceeded USD 30M.	Multi-jurisdictional enforcement targets developing-economy manufacturing operations.
Ericsson v. Micromax/Lava/Intex	India (Delhi HC)	Settled 2019; INR 1/handset FRAND rate established.	Indian courts have shown readiness to grant SEP injunctions and set FRAND rates.
Acacia Research Corp.	U.S. (multi-district)	Revenue declined from USD 263M (2013) to USD 98M (2019) post-Alice.	Alice and AIA/IPR directly associated with decline in PAE profitability.
InterDigital v. Xiaomi/Oppo/Micromax	India (Delhi HC, ongoing)	Unresolved; raises global FRAND rate jurisdiction questions.	Absence of FRAND statutory framework creates legal uncertainty in the resolution of SEP disputes in India.

Table 2. Landmark PAE Case Studies. Sources: Lex Machina 2023; Delhi HC case registry; Acacia Research annual reports.

Economic Impact of PAEs

PAE are well documented in the economic literature to have a significant cost at several levels. In the United States the direct litigation expenses are estimated at USD 6-8 billion annually in the U.S.; settlements litigation expenses add up to USD 8-12 billion; internal legal and administrative expenditures for operating companies is estimated to USD 5-8 billion. The biggest impact is the innovation deterrence which is the most significant. According to a study of 2021 from NBER, companies that were the first to be called by the PAE demand letter cut R&D investment by an average of 1.3% over the next three years, and those that were subjected to more than one demand letter saw a drop of 3.1% [9]. Even if the likelihood of infringement is low, for SMEs, who often are not equipped with IP departments or have limited financial resources to support a long-term litigation process, it may be the economically sound option. A 2022 Start-up Policy Lab survey found 23% of U.S. technology start-ups had received PAE demand letters, out of those, 67% altered product development plans or withdrew affected product from market in response.

India: Patent Ecosystem and PAE Vulnerability

India's patent ecosystem has evolved significantly, with growth of patent grants from 5,978 in 2015 to over 30,490 in 2022, examination pendency falling from 72 months to approximately 38 months and IP's contribution to GDP escalating from 1.8% to 2.6% over the same period [10]. Nevertheless, this growth also heightens India's vulnerability for PAE assertion, as a larger patent landscape, an expanding technology sector and increasing market capitalisations create more lucrative opportunities for patent assertion.

Based on court records and industry reports, estimated PAE-related patent activity in India between 2018 and 2023 includes 45–65 formal litigation cases involving PAE or PAE-adjacent entities; 300–500 estimated pre-litigation demand letters; INR 200–800 crore in estimated cumulative settlement payments; and primary sectors targeted including Telecommunications/5G (40%), Software/IT (25%), Semiconductors (15%), and Pharmaceuticals (12%). The most critically neglected vulnerability is the absence of a statutory FRAND framework, which is the need of the hour, as India's telecom sector invests an estimated USD 40–50 billion in 5G infrastructure through 2027.

Policy Recommendations for India

This paper proposes following policy framework designed for implementation to deal with PAEs.

- **Fee-Shifting Provisions:** Amend Section 105 of the Patents Act 1970 to introduce mandatory fee-shifting where asserted patents are found invalid or not infringed in NPE-initiated cases, modelled on the U.S. Octane Fitness (2014) framework. As a most cost-effective anti-PAE measure, Fee-shifting fundamentally alters the PAE cost-benefit calculation without the need for any new administrative infrastructure.
- **Injunction Reform:** Supplement existing standards governing interim injunction by introducing a statutory provision requiring courts, when adjudicating NPE applications, to consider the public interest in continued availability of defendant products, the adequacy of monetary damages as a remedy for the NPE, and whether the NPE has demonstrated harm extending beyond the loss of royalty income. This remains consistent with TRIPS Article 44 compliance while addressing the principal source of PAE bargaining leverage.

- **Transparency Requirements:** Mandate disclosure of complete patent chain-of-title, any litigation funding interests and prior licensing agreements in all patent infringement proceedings, enabling courts to evaluate claimants conduct and determining the eligibility for fee-shifting.
- **Specialised Patent Adjudication:** Establish a dedicated Patent Division within existing High Courts with technically qualified judicial officers following the Singapore model and a Patent Small Claims Track for claims below INR 5 crore, inspired by UK's IPEC. This would provide SMEs with an efficient and affordable dispute resolution mechanism, reducing the economic pressure to settle irrespective of the merits of the claim.
- **FRAND Regulatory Framework:** Enact a dedicated legislation governing SEP to require patentees to make bonafide FRAND offer, before seeking injunctive relief. Establish government-administered arbitration mechanism for FRAND rate disputes and create a publicly accessible FRAND rate database.
- **Patent Quality Enhancement:** Recruit over technically qualified examiners in technology sectors with high- risk of PAE- activity; foster examination collaboration with USPTO, EPO, and JPO; set up an early post-grant opposition mechanism within 3 months of grant; and deploy an AI-assisted prior art search system.
- **Defensive Patent Pool:** Establish a government-aided defensive patent acquisition program for Indian SMEs, based on Korea's KOTEC model.
- **International Cooperation:** Build bilateral PAE enforcement cooperation agreements with the U.S., EU, UK and Japan, to facilitate mutual recognition of fee-shifting orders and information sharing mechanism for identifying serial PAE asserters.
- **Competition-Patent Interface:** Formulate clear CCI guidelines on the intersection between patent assertion and competition law, thereby providing legal certainty in determining whether PAE-type assertions amount to abuse of dominant position.

Conclusion

Patent Assertion Entities pose a global challenge to the patent system's fundamental objectives of incentivising innovation. This comparative analysis shows that the prevalence and impact of the PAE problem varies significantly across jurisdictions, depending upon various factors like patent quality, litigation cost asymmetries, availability and judicial specialisation. The U.S. experience confirms that well designed, evidence-based reforms can significantly curb PAE litigation. Measures such as the AIA's IPR mechanism, Alice's impact on software patent eligibility, TC Heartland's venue reform have substantially shown to reduce PAE abusiveness, contributing to 40–50% reduction in PAE litigation activity between 2015 and 2022.

India is positioned at a critical stage in the development of its intellectual property regime. Its rapidly expanding patent landscape, fast evolving technology sector and rising global manufacturing presence, on the one hand increases risk of vulnerability to PAE exploitation and on the other hand provides an opportunity to develop preventive legal and institutional reforms. The existing features of the India's patent regime including Section 3(d) of the Patents Act, compulsory licensing, the emerging FRAND jurisprudence developed in Ericsson and Inter Digital provides a strong base for development of anti-PAE framework through well targeted legislative and institutional reforms. The proposed three-tier reform framework in this paper adopts a phased implementation policy, with an aggregate implementation cost estimated at INR 500-800 crore over a decade. This is substantially lower than the projected INR 2,000-

5,000 crore in PAE-related costs that India's technology sector could incur in the absence of timely legislative and institutional reforms.

India has the opportunity to develop and shape a patent regime drawn on collective international experience of other jurisdictions. The experience accumulated over past decade has generated sufficient empirical evidence on the strengths and limitations of different approaches to PAE regulation. Given India's emerging position in the global technology landscape, there is a compelling need to translate these insights into timely and effective policy reform.

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