

Leveraging intellectual property for technology commercialization and diffusion

IP trends in the Asia-Pacific and commercialisation framework

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Abstract

The Asia-Pacific (APAC) region accounts for the second-largest share of the global Intellectual Property (IP) market, following North America. In recent years, the region has witnessed a significant increase in IP filings and efforts to leverage IP assets for economic and technological advancement. From China's aggressive patenting to India's IP policy reforms and the digital IP innovations of Pacific Island nations, diverse strategies are shaping commercialisation. However, gaps remain between owning patents and successful market diffusion. This article explores recent IP commercialisation trends across the Asia-Pacific. Data from 150 Indian inventors holding patents demonstrates institutional support, resources, incubator systems, and the role of networks in enabling commercialisation. We outline key challenges, strategies, and opportunities related to innovation, IP, and commercialisation. To illustrate the practical dimensions, the article includes a case study of a Bengaluru-based startup that strategically brought its patented technology to market despite significant challenges.

Introduction

The pace of innovation and intellectual property (IP) activity in the Asia-Pacific is unprecedented. Across the dynamic and diverse economies of the Asia-Pacific region, IP emerges as a foundational pillar in the journey from scientific discovery to scalable technology solutions. The region has shifted from being a consumer of global technologies to becoming a formidable source of innovation. In 2023, Asia accounted for nearly 69% of global filings across patents, trademarks, industrial designs, and most utility model applications, followed by the United States. China alone filed over 1.64 million patents, maintaining the global lead, followed by Japan with over 400,000 filings, while India recorded a 15.7% year-on-year growth,

surpassing 64,000 applications (WIPO, 2024) and reflecting strong gains in domestic innovation (Table 1). Countries such as Vietnam, the Philippines, and Türkiye were recognised by the World Intellectual Property Organization (WIPO) as among the fastest risers in innovation capacity. In addition, IP-related exports and technology payments across the region have steadily increased, signalling a stronger focus on translating IP into economic value. As digital transformation accelerates, the region's innovation ecosystem continues to get reshaped by artificial intelligence (AI), advanced manufacturing, and national IP strategies, thus positioning Asia-Pacific as a powerful player in the global knowledge economy (Sharma, 2025). The Vietnamese government has stepped up support for patent registration to increase its presence in the global intellectual

property market (Nguyen et al., 2023). The Republic of Korea's top conglomerates are monetising the IP portfolios in order to increase liquidity and fortify their strategic positioning (Korea Times, 2024). The Asian region, therefore, not only reflects a strong domestic innovation drive (evident in resident filings) but also demonstrates growing attractiveness to foreign inventors as well (through non-resident filings). The trend underscores the region's strategic investments in R&D, policy reforms, and evolving IP infrastructure. Among Asia-Pacific countries, China, Japan, the Republic of Korea and India feature prominently in the top six in global patent filings (Figure 1).

While the number of patent filings increases, the proportion of IP leading to actual market deployment remains low. The disconnect highlights what may be called the "commercialisation gap", which continues to be a central concern for policymakers, entrepreneurs, and researchers alike. Countries like China, Japan, the Republic of Korea, and India lead in patent filings (WIPO, 2024). However, the rate at which these innovations are transformed into commercially viable products or services remains relatively low (GII, 2024).

The gap stems from several interrelated issues. Many innovations are developed without clear go-to-market strategies or real-world demand validation. Moreover, research institutions often operate in silos (Carreno, 2024), with limited engagement with the private sector, hindering technology transfer. Inventors and startups frequently lack the business acumen or legal knowledge required to navigate IP protection, licensing, and market scaling (Leon & Donoso, 2017). Additionally, early-stage funding for IP-intensive ventures remains a challenge, particularly outside established ecosystems (WIPO, 2025). The APAC region's diver-

Table 1: Application by origin, 2023 for top 5 Asian and top 3 Pacific countries

Origin of applications	Patent	Utility model	Trademark	Industrial design
China	1,642,507	3,061,371	7,417,394	882,807
Japan	414,413	4319	349685	34589
The Republic of Korea	287,954	3901	334032	60120
India	64,480	547	496293	26966
Indonesia	1,727	4368	120880	4949
Australia	11,199	162	125423	5505
New Zealand	2618	49	29915	1106
Samoa	56	6	436	11

(Source - IP Facts and Figures 2024)

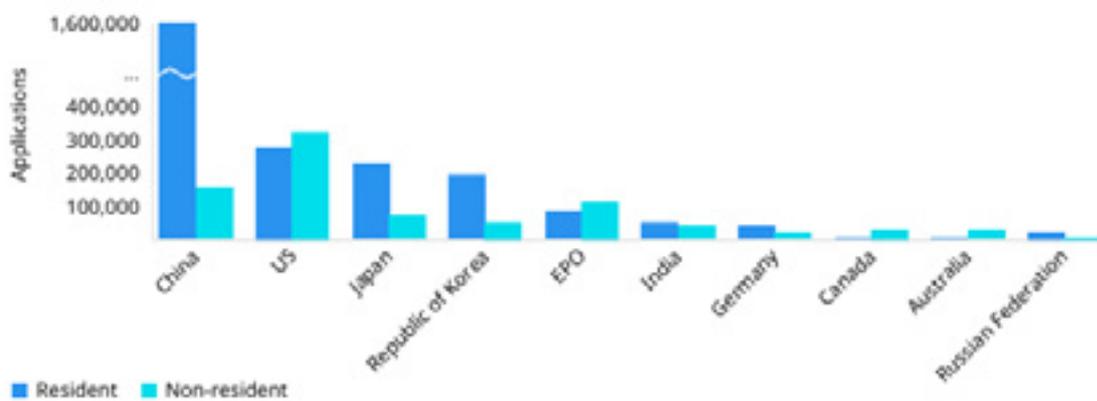


Figure 1: Patent applications at the top 10 offices, 2023

(Source: WIPO, 2024)

city, ranging from advanced economies like Japan and Australia to emerging nations like Cambodia and Fiji, indicates that commercialisation challenges are uneven. National IP frameworks vary widely, creating inefficiencies and legal uncertainties for innovators operating across borders. Harmonising standards, particularly in patent examination, IP valuation, and dispute resolution, remains a challenge (Fowler, 2021). In countries such as India and Thailand, university Technology Transfer Offices (TTOs) are nascent and under-resourced. India has struggled to convert publicly funded research into licences despite policy efforts (Ray & Saha, 2010). Risk aversion among public institutions and bureaucratic

delays further stifle innovation diffusion. Even after successful licensing, weak enforcement mechanisms deter commercial investment. In several Southeast Asian nations, counterfeit markets and IP theft remain significant issues as well (Fink et al., 2016).

Despite the challenges, a wave of innovative practices and reforms is reshaping the IP landscape in Asia-Pacific. Countries like India and Viet Nam have launched comprehensive IP policies aimed at strengthening domestic innovation ecosystems. India's National IPR Policy has enhanced patent examination capacity and public awareness campaigns (DPIIT, 2020). Vietnam has reformed the IP law to better support

international collaborations (Nguyen et al., 2023). Leading universities and research parks are integrating IP support within incubation systems. For instance, Singapore's BLOCK71 and India's BIRAC BioNEST programs provide startups with IP mentoring, legal services, and connections to industry partners (GII, 2022). The rise of online IP marketplaces, such as WIPO GREEN (WIPO, 2022) and Japan's IP BASE (Japan Times, 2019), further enable exchange and licensing of technology assets.

The Republic of Korea's conglomerates are increasingly treating IP as financial assets. Hyundai and Samsung have used IP-backed securitisation

and sale-leaseback models to generate capital while retaining technology access (Korea Times, 2024). Joint ventures between ASEAN countries and innovation hubs in the Republic of Korea, Japan, and China are increasing. These include patent pooling arrangements, co-development grants, and regional IP sharing agreements. These developments suggest some economies in the region are gradually evolving toward a more mature, market-oriented IP environment (ASEAN IP Portal, 2023).

The Asia-Pacific region remains rich in creativity and technological potential. However, nations must prioritise both the quantity and quality of IP outputs in order to move from an IP-rich environment to an economy driven by innovation. Bridging the commercialisation gap requires more than patents, and demands robust networks, institutional support, and policy coherence. The commercialisation of intellectual property becomes crucial to the region's competitiveness in the future as nations embrace digital ecosystems and implement strategic reforms. Asia-Pacific countries may use IP as legal assets and as engines of equitable and sustainable economic growth, as well as fostering an environment for the free flow of ideas from research labs to international markets. By cultivating an enabling ecosystem where ideas can move fluidly from research labs to global markets, Asia-Pacific nations can harness IP not only as legal assets, but also as drivers of inclusive and sustainable economic growth.

Key factors in IP commercialisation

The successful commercialisation of IP gets shaped by a constellation of interrelated factors spanning individual, organisational, and ecosystem levels as outlined below.

Association with incubators

Incubators significantly enhance the commercialisation potential of IP by providing startups with mentoring, technical infrastructure, access to funding and business development networks (Barbero et al., 2014). The strategic focus of incubators, whether

aimed at technology valorisation, regional growth, or commercialisation, can shape commercialisation outcomes (Clarysse et al., 2005; Máté et al., 2024). Notably, incubators embedded within strong innovation ecosystems tend to yield higher success rates by bridging the gap between invention and market readiness.

IP support mechanisms

Evidence from Southeast Asia illustrates the effectiveness of Innovation and Technology Support Offices (ITSOs) in facilitating patenting and technology transfer (Dellosa, 2017). University-level IP support, particularly in emerging economies like Thailand, positively influences faculty decisions to commercialise research outputs (Maneerattanarungrot et al., 2024). IP support structures, including patent guidance and technology transfer offices, enhance the institutional capacity to transition innovations from the lab to the market (Fiedler & Welpé, 2009).

Organisational and managerial support

Organisational support, comprising strategic guidance, consultative leadership, and resource allocation, demonstrates a significant role as a determinant of successful commercialisation. Structured managerial assistance within incubators correlates with higher innovation output and survival rates (Colombo & Delmastro, 2002). Managerial coaching and mentoring bridge the experiential gap for less-experienced innovators, enabling them to navigate early-stage challenges (Al-Mubarak & Busler, 2017). Additionally, supportive environments, marked by managerial confidence and collaborative leadership, increase the likelihood of successful idea implementation (Grobler, 2018; Zolfaghar Arani et al., 2024).

Difficulty in securing funding

Financial constraints are a widely acknowledged barrier to commercialisation. Traditional financial institutions often fail to recognise the potential of high-tech ventures due to informational asymmetries, resulting in credit rationing (Colombo & Delmastro, 2002).

Without access to external funding, inventors may be forced to depend on personal savings, skewing opportunities towards more affluent entrepreneurs (Evans & Jovanovic, 1989; Holtz-Eakin et al., 1994a). Hence, the ease or difficulty of securing funding critically shapes an innovator's ability to invest in prototype development, marketing, and operational scaling.

Diversity of networks

Networks are crucial for facilitating IP commercialisation, especially in knowledge-intensive sectors. Collaborative innovation networks offer access to complementary assets such as market intelligence, regulatory advice, and technical expertise (Misra, 2018). High-performing networks include public agencies, incubators, venture capitalists, and legal support services, which collectively reduce uncertainty and enable smoother transitions from R&D to market application (Yazdimoghaddam et al., 2019; Pellikka & Virtanen, 2009). However, misaligned or ineffective networks can hinder rather than help, thus emphasising the need for the diversity of collaborative networks (Aarikka-Stenroos et al., 2014).

Type of funding source

The source of funding can also influence commercialisation outcomes. While personal savings may be the most readily accessible source, they are inherently limited and socially unequal. In contrast, government grants and private investment provide scalable and often more stable avenues for commercialisation. These sources also typically come with added benefits such as mentorship, regulatory guidance, and enhanced visibility within innovation ecosystems (Colombo & Delmastro, 2002).

Years of experience

Experience, both technical and managerial, significantly predicts commercialisation success. Teams with prior experience in commercialisation or industry are better positioned to manage uncertainty, adapt to market changes, and strategically allocate resources (Yazdimoghaddam et al., 2019). Empirical evidence demonstrates that experienced entrepreneurs are more effective

tive at navigating commercialisation bottlenecks, acquiring capital, and leveraging networks (Pellikka & Virtanen, 2009). Furthermore, incubated firms often led by more experienced founders outperform their counterparts in adopting new technologies and translating research into viable products (Colombo & Delmastro, 2002).

Assessing the commercialisation of intellectual property

The study aims to investigate the key enablers and barriers to the commercialisation of intellectual property among Indian inventors. While India experiences substantial growth in IP filings (over 600,000 as of 2023), translating these into viable commercial products remains inconsistent and underexplored. The framework identifies patterns between commercialisation success and factors such as institutional support, funding access, network association, satisfaction with available resources, and experience (Figure 2). The analysis is grounded in empirical data collected from a diverse sample of Indian IP holders.

The sample comprised 150 Indian inventors who hold at least one patent. Of the total respondents, 98 were male and 52 were female. In terms of educational qualifications, 90% of respondents held a PhD, while the remaining 10% had completed postgraduate degrees.

The dependent variable was the commercialisation status, categorised as a binary outcome, either the IP was commercialised or not. The independent variables included: association with an incubator (yes or no), IP support received (yes or no), satisfaction with organisational support and resources (satisfied or not satisfied), and difficulty in securing funding (yes or no). Additionally, variables capturing external influences were considered, such as network type, classified into none, single-type, or diverse network; funding source, categorised as personal savings, government grants, or private funding; and years of experience, grouped into four categories: 0–4 years, 5–9 years, 10–14 years, and 15 or more years. These variables provided a comprehensive view of the ecosystem and contextual factors enabling or hindering the successful commercialisation of IP among Indian inventors.

Data analysis

Among 150 inventors, commercialisation outcomes varied significantly based on several enabling and constraining factors. Inventors who were associated with an incubator demonstrated notably higher commercialisation success, with 58.3% having commercialised their IP compared to only 37.2% among those without association with an incubator.

Similarly, access to IP-related support services had a strong correlation with commercialisation outcomes; 56.6% of those who received IP support had successfully commercialised their innovation, while only 25% of those without such support had done so.

Network diversity played a critical role. Inventors who reported having diverse collaborative networks achieved a 65.5% commercialisation rate, significantly higher than those in single-type (50%) or no network categories (11.1%). Satisfaction with organisational support also influenced outcomes to a degree; 47.3% of those satisfied with their organisation’s support had commercialised their IP, compared to 47.4% among dissatisfied respondents. However, the difference was later found not to be statistically significant.

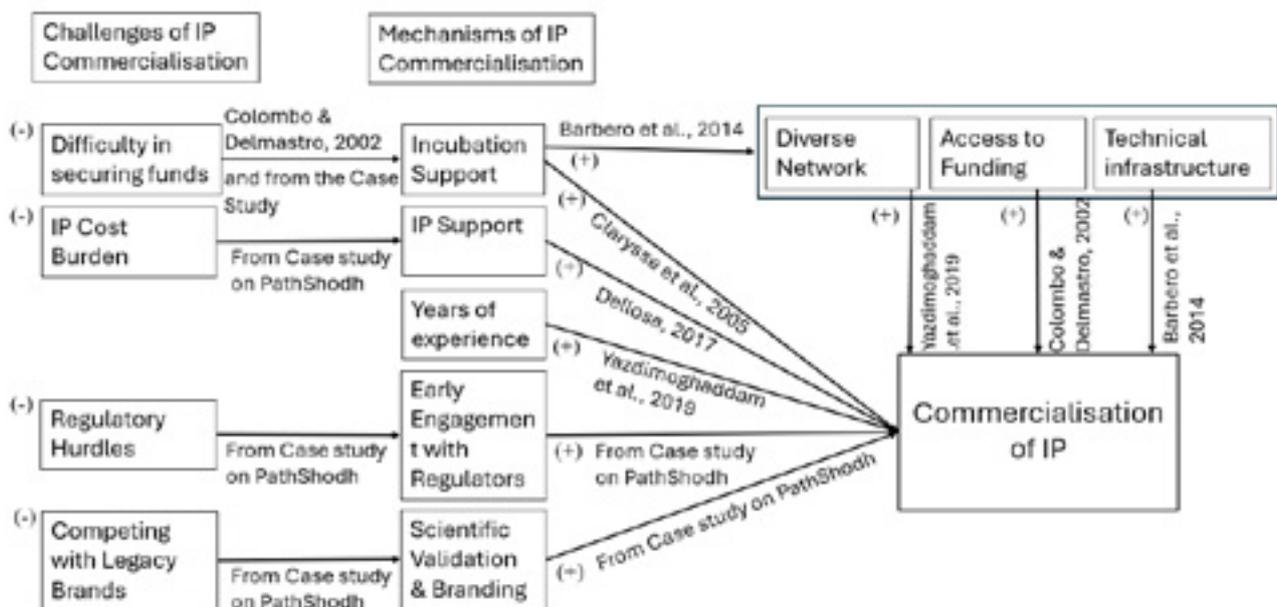


Figure 2: Data and case study driven framework

Funding access emerged as a key differentiator. Inventors who did not face difficulties in securing funding had a much higher success rate (64.4%) than those who faced funding challenges (21.7%). When considering sources of funding, government grants were associated with the highest commercialisation success (56.6%), followed by private funding (47.5%), while personal savings were the least effective (26.5%) (Table 2).

Experience also played a significant reinforcing role (chi-square = 84.04, $p < .05$). Inventors with more than 10 years of experience and who also had access to incubator support or diverse networks showed the highest commercialisation rates, often exceeding 70%. In contrast, those with less experience and minimal support reported significantly lower rates.

Statistical analysis confirmed several of the above trends. Association with

an incubator showed a statistically significant relationship with commercialisation (t value = -2.64, $p < .05$), indicating inventors with incubator support were 21 percentage points more likely to commercialise their IP. IP support had an even stronger significance (t value = -4.48, $p < .05$), with a 41-point difference in commercialisation success between those who received support and those who did not.

Table 2: Demographic details of all variables

Factors	Commercialised (in %)	Not commercialised (in %)	No. of respondents
Incubator association			
Yes	58.3	41.7	72
No	37.2	62.8	78
IP support received			
Yes	56.6	43.4	106
No	25.0	75.0	44
Network type			
Diverse	65.5	34.5	87
Single type	50	50	18
None	11.1	88.9	45
Organisational support			
Yes	47.3	52.7	91
No	47.4	52.6	59
Funding difficulty			
Yes	64.4	35.6	90
No	21.7	78.3	60
Funding source			
Government grants	56.6	43.4	76
Private funding	47.5	52.5	40
Personal savings	26.5	73.5	34

The diversity of networks was highly significant (chi-square = 41.3, $p < .05$). Inventors engaged in diverse networks had a linear and positive relationship with commercialisation rates. Funding source was also statistically significant (chi-square = 8.54, $p < .05$), with government grants most strongly associated with commercialisation success. Likewise, the challenge of securing funding showed

a substantial effect (t value = 5.626, $p < .05$), with those not facing difficulties being 43 percentage points more likely to succeed in commercialisation. On the other hand, satisfaction with organisational support, while descriptively important, did not reach statistical significance, indicating the factor alone may not directly influence commercialisation outcomes (Table 3).

We applied a binary logistic regression model to examine the impact of various factors on the likelihood of IP commercialisation, as the dependent variable, commercialisation status, is binary (i.e., commercialised vs. not commercialised). The model included key independent variables such as incubator association, IP support, satisfaction with organisational support, difficulty in

Table 3: Statistical analysis

Variables	Tests	Test value	p value
Incubator association X Commercialisation	t-test	-2.64	<0.05*
IP support X Commercialisation	t-test	-4.48	<0.05*
Network type X Commercialisation	Chi-square	41.3	<0.05*
Organisational support X Commercialisation	t-test	.024	>0.05
Experience X Commercialisation	Chi-square	84.04	<0.05*
Funding difficulty X Commercialisation	t-test	5.626	<0.05*
Funding source X Commercialisation	Chi-square	8.54	<0.05*

Table 4: Regression analysis

Variables in the equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a	Org support (Yes)	0.001	0.478	0.000	1	0.998	1.001
	Network type			8.897	2	0.012	
	Network type (single type)	-0.684	0.711	0.925	1	0.336	0.505
	Network type (diverse)	2.052	0.682	9.064	1	0.003	7.788
	Incubator (Yes)	0.729	0.509	2.054	1	0.152	2.073
	IP support (Yes)	0.000	0.544	0.000	1	1.000	1.000
	Funding source			6.229	2	0.044	
	Funding source (personal savings)	-0.466	0.562	0.688	1	0.407	0.628
	Funding Source (govt. grants)	1.581	0.634	6.220	1	0.013	4.861
	Difficulty in securing funds (Yes)	-0.288	0.540	0.285	1	0.594	0.750
	Experience	0.115	0.027	17.739	1	0.000	1.122
	Constant	-0.197	0.691	0.081	1	0.776	0.821

securing funding, network type, funding source, and years of experience. The findings indicate experience is a strong and statistically significant predictor ($p < 0.001$), with each additional year increasing the odds of commercialisation by approximately 12% ($\text{Exp}(B) = 1.122$). Network type was also significant ($p = 0.012$), with inventors embedded in diverse networks being substantially more likely to commercialise their IP ($\text{Exp}(B) = 7.788$, $p = 0.003$), compared to those with no networks. Funding source emerged as another significant variable ($p = 0.044$), where reliance on government grants notably increased commercialisation likelihood ($\text{Exp}(B) = 4.861$, $p = 0.013$), whereas personal savings did not yield a significant effect.

Other factors, such as incubator support, IP support, organisational support, and ease in securing funding, while not statistically significant, demonstrated directions consistent with theoretical expectations, suggesting their presence may still play a supportive role in commercialisation outcomes (Table 4).

Leveraging IP for affordable diagnostics: The case of PathShodh Healthcare (India)

PathShodh Healthcare Pvt. Ltd., an Indian health-tech startup incubated at the Indian Institute of Science (IISc), illustrates how IP strategy, institutional support, and strategic networking can enable commercialisation of academic research into socially impactful technologies. Originating from a PhD project, PathShodh has successfully translated biosensor innovations into market-ready products, backed by patents in eight countries and regulatory approvals for use in India. The case study explores the challenges, strategies, and opportunities PathShodh encountered in leveraging IP for technology commercialisation and diffusion, aligning with recent survey data across Asia-Pacific on IP-enabled innovation pathways.

Context and genesis of innovation

PathShodh's journey began as a doctoral proposal by Dr. Vinay Kumar Chauhan, a diabetic himself, at the Centre for Nano Science and Engineering (CeNSE), Indian Institute of Science (IISc). His goal was to develop an electrochemical biosensor capable of detecting diabetic complications, kidney disease, anaemia and liver-related ailments at early stages. While the original intent was academic, repeated clinical engagements with pathologists illuminated the broader healthcare gap and market need.

India has one of the world's highest diabetes burdens, yet over 90% of diagnostic technologies are imported. PathShodh's innovation, therefore, not only addressed a public health issue but also targeted a critical gap in India's diagnostic technology manufacturing capacity.

Challenges in leveraging IP for commercialisation

1. Financial constraints and high risk

Securing funding in the initial ideation and development phases forms a significant barrier for research-led startups. In PathShodh's case, while early support through grants like the Biotechnology Industry Research Assistance Council (BIRAC) Biotechnology Ignition Grant was instrumental in de-risking initial R&D, the financial challenges extend far beyond early prototyping. Operationalising a health-tech device, especially one involving high-precision diagnostics, requires sustained investment across clinical validation, manufacturing scale-up, and regulatory navigation. For a startup emerging from academia without immediate commercial backing, managing these capital-intensive demands involved high financial exposure and constant fundraising pressures. Securing funding remains a persistent challenge. Pathshodh has secured its funds from angel investors and government grants.

2. Patent maintenance and IP cost burden

PathShodh's global patenting strategy, covering eight countries including the US, UK, Germany, China, and Japan, was critical in safeguarding its innovation. However, as Dr. Chauhan emphasised, the cost of maintaining these patents, particularly annual annuity fees, has become a recurring burden. For resource-constrained startups, global IP protection becomes a double-edged sword: necessary for securing market and investor confidence, yet the cost of maintenance can consume valuable financial bandwidth. Without immediate monetisation of the IP, such costs strain liquidity and necessitate strategic decision-making on where and how long to maintain protection.

3. Regulatory hurdles and time delays

Commercialising healthcare technology in India demands stringent regulatory approvals from bodies like the Drugs Controller General of India (DCGI). Navigating the process remains time-consuming and complex, particularly for a young team without prior market experience. The complexity multiplies when aiming for global diffusion, as each country or region (e.g., Europe's CE marking, US FDA) has distinct processes, documentation, and validation requirements.

4. Competing with legacy brands in a logic-driven market

PathShodh entered the highly specialised field of diagnostic biosensors, a sector dominated by multinational corporations with decades-long legacies, brand loyalty, and validated supply chains. Unlike consumer tech or lifestyle products, biosensors operate in a space where branding and psychology play a limited role, medical technologies are evaluated almost exclusively on scientific rigor, accuracy, and regulatory trustworthiness. In such a logic-driven market, newcomers like PathShodh must not only demonstrate equivalent or superior product performance but also do so while being price-competitive and uncompromising on quality. Building trust from scratch, especially for a life-critical product, requires overcoming institutional inertia and scepticism.

Strategies for IP commercialisation success

1. Early IP filing as a research strategy

Dr. Chauhan filed initial patents during his PhD itself, before commercialisation was even considered. The early filing, backed by IISc's IP support system, gave PathShodh a head start in protecting core technology and ensured "freedom to operate" when commercial interest eventually emerged.

2. Incubation ecosystem and public funding

Being incubated at IISc's Society for Innovation and Development (SID) provided not just infrastructure but access to mentorship, investors, and grant opportunities. The Biotechnology Ignition Grant was crucial in bridging the early "valley of death." Regular reviews by incubator mentors kept the team aligned with both scientific and business milestones. The role of incubators, enhancing commercialisation by 21 percentage points is validated in the regional data.

3. Building strategic networks

From the early stages, PathShodh invested in building strong networks with clinicians, healthcare professionals, regulatory advisors, academic collaborators, and investors. These networks played a critical role in refining product design through clinical feedback, attracting private funding and partnerships, and creating a customer base. Our findings show startups combining diverse collaborative networks with incubation support demonstrate up to 77.8% commercialisation success, underscoring the impact of this strategy.

4. Technology-first market entry

Rather than relying on emotional branding, PathShodh focused on performance, affordability, and scientific rigor. The strategy was essential to penetrate a logic-driven medical diagnostics market. Clinical studies, peer-reviewed publications, and transparent validation data helped establish credibility in a sector that remains sceptical of new entrants.

5. Hybrid manufacturing model

To balance scalability with intellectual property protection, PathShodh built a hybrid manufacturing approach: core R&D integration is retained in-house, while component production and final assembly are outsourced to vetted EMS (Electronics Manufacturing Services) partners. This model keeps the secrets safe, allows for faster time-to-market, and cost efficiency.

6. Vision-driven IP management

Dr. Chauhan highlighted an important principle: a bold vision drives the value of an IP. For startups looking to exit early or license technology, expansive patent portfolios can become a financial strain. However, PathShodh's long-term vision to scale globally justified their investment in maintaining patents in eight countries. The approach reflects an understanding of IP not as a static asset, but as a strategic enabler of future market access, partnerships, and investor confidence.

7. Addressing the cultural undervaluation of PhD-led innovation

Undervaluation of PhD research forms a unique and systemic challenge in India. Dr. Chauhan highlighted societal pressures, poor research stipends, and limited entrepreneurship exposure often leading PhD scholars to undervalue their innovation potential. By turning a PhD-derived technology into a market-ready product, PathShodh shattered the old story that PhDs only gather dust. The organisation showcased how institutional support, incubation, and IP strategy can transform scholarly research into scalable impact. The strategy emphasises the criticality of redefining doctoral research as a launchpad for high-tech entrepreneurship, rather than a mere academic degree.

PathShodh explores certification for European Conformity (CE)-marking to enter global markets and aims to develop modular diagnostic kits suited for export to markets in Asia and Europe. The startup's success reveals how startups can move from idea to international diffusion by:

- Protecting core IP while keeping manufacturing and R&D agile;

- Designing for local use but validating for global standards;

- Using public funds to de-risk early R&D, while pivoting to private capital for scale.

Conclusion: opportunities and emerging models

The Asia-Pacific region, while already one of the leaders of IP filings, stands at a turning point in its journey towards becoming an innovation-driven economy. Drawing on data from 150 Indian inventors with patents, empirical evidence highlights the key enablers of successful commercialisation. Inventors affiliated with incubators with strong IP cells are more likely to engage in commercialisation. Inventors with years of experience, broader networks, including mentors, legal experts, entrepreneurs and academicians, fare better in bringing innovations to market. However, the conversion of intellectual assets into market offerings is hampered by a continuing commercialisation gap, even in the face of notable advancements in patenting and IP creation. This disconnect is not solely due to lack of innovation, but due to systemic challenges such as limited funding availability, insufficient organisational support, high patent maintenance costs, regulatory hurdles, and market resistance from established legacy brands and underdeveloped IP-industry links.

The case of PathShodh Healthcare vividly illustrates a compelling roadmap for overcoming these barriers. PathShodh successfully navigated commercialisation hurdles by strategically leveraging government grants during its early development phase, building multidisciplinary networks. The startup benefited from incubation support, filed patents early, and actively engaged with regulatory bodies and industry stakeholders. While the journey was fraught with regulatory and funding delays, the firm managed to manufacture its technology through EMS (Electronics Manufacturing Services) firms in India, highlighting how structured support systems can bridge the commercialisation gap.

The integrated framework developed in this study (Figure 2) synthesises both empirical data and lived experience to highlight the interdependence between support mechanisms (such as incubation and IP services), ecosystem-level attributes (like funding access and networks), and individual factors (such as experience). By grounding this framework in quantitative evidence and real-world practice, it offers a robust roadmap for IP stakeholders.

Looking ahead, the Asia-Pacific region must foster an inclusive innovation ecosystem where inventors are empowered not just to protect their ideas but to deploy them meaningfully. By doing so, IP will cease to be a static legal instrument and become a dynamic force driving sustainable development, public health, technological sovereignty, and regional competitiveness.

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