

## Product Innovation: The Untapped Opportunity in Med Tech

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Medical technology, a vast sector that encompasses everything from bandages to MRI machines, is an integral part of an effective healthcare system. Medical technology (MedTech) includes diagnostics, hospital equipment, consumables, surgical tools (including multi-million dollar robotic systems), implants, software, and various other kinds of life-saving and life-enhancing technologies. While smaller than the pharmaceutical sector in terms of sales, MedTech is as critical in the provision of effective healthcare all over the world. The MedTech industry in India is estimated to be Rs.50-70,000 crore, growing briskly at 15% annually, and is expected to reach Rs.150,000 crores by 2025. Globally, the sector is also growing, from \$500 billion today, to an expected \$600 billion by 2025.

The MedTech industry is dominated by Western (mainly American firms), which lead the world in product innovation. MedTech is a strong export sector for the US and a few other countries like Israel, Switzerland and Ireland, while India still imports over 75% of its medical technology. Indian companies have begun making strides in certain areas of MedTech, providing high-quality and affordable products in diagnostics, monitoring, implants, etc. China, though, has taken a lead in this area- having created global MedTech companies which compete on price and quality with global majors.

However, if one takes a closer look at the successes of Indian and Chinese companies, we find that these are restricted to incremental innovation on existing technologies (for price and feature differentiation)- whether they be X-rays, CT scanners, stents, knee implants, etc. Very few companies are creating fundamentally new products, based on a novel, patented, technologies, to address unmet healthcare needs. Product innovation (sometimes called “deep tech” when applied to high-impact areas) is conspicuous by its absence in Indian and Chinese MedTech industries, while the US industry is built on, and led by, product innovation and IP.

The global MedTech industry offers some insights into how product innovation is driven, and monetized, in this sector. MedTech is a startup-friendly sector, with an estimated 5-7,000 MedTech startups in operation in the US today. These startups work on a particular problem, or sometimes a core technology, to build new, IP-protected, products. These products

are then licensed to large global MedTech majors for commercialization and the startups continue to focus on product innovation.

Some Indian startups to have started focusing on product innovation, recognizing that Indian healthcare challenges may require completely new products and technologies that today don't exist. This approach starts with a deep understanding of the healthcare challenge that needs to be addressed, typically by spending a couple of months in a hospital in the relevant department. This is followed by the creation of novel concepts, engineering of new technologies, and product development – a process that can take 3-5 years, or even longer. At InnAccel we have used just this approach to create completely novel technologies that address two critical challenges we face in India- the high rate of lung infection, and death, in patients on a ventilator; and the high rates of death due to lack of breathing support for premature babies outside of the NICU. These two conditions cause over 4 lakh reported deaths in India each year, (and over 10 lakh globally). A third product we have developed addresses the poor quality of labor monitoring in India (leading to over 3 lakh perinatal deaths), by leveraging fetal ECG signal extraction (a new technology), and machine learning, to make labor monitoring simple, skill-independent, and highly accurate. All these problems required the creation of novel products, incorporating artificial intelligence, precision engineering, electronics, software, and product design expertise, and generate valuable IP in the form of patents on novel technologies.

The government has been doing a lot to support such innovation. BIRAC, the funding arm of the Dept of Biotechnology, has provided grants to over a hundred MedTech projects, at different stages of development. There are several other grant-making bodies, such as Indian and international Foundations, that are also supporting MedTech innovation in India. VC interest, and capital, in the sector, has been slowly increasing, albeit from a low base- and is likely to explode once a couple of successes are seen in this sector.

In summary, MedTech offers a generational opportunity for innovators and entrepreneurs- a large, fast-growing sector with global opportunity, an obvious product innovation gap, and the opportunity to create extraordinary impact along with economic success. The sector's perceived challenges, i.e. time and investment to develop and launch a product, uncertainty around commercial success, and a fluid regulatory environment with periodic price control challenges, do not take away from the fundamental opportunity this sector offers. The opportunity is global, as most emerging economies will face similar healthcare challenges as India, and will be relevant markets for such products. India today has a unique opportunity to become the MedTech innovation hub for global emerging markets, much like the US is for developed markets. Capitalizing on this opportunity will enable India to craft another global success story (after IT and pharmaceuticals) while transforming the lives of 125 crore Indians.

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