Dream. Innovate. Build.

India's startup successes are mostly about software firms such as Flipkart and Ola, and rarely about hardware product companies. **J Vignesh** spoke with product entrepreneurs who have been there and done that for lessons the industry can tap into

When the founders of electric scooter maker Ather Energy and medical diagnostics firm Achira Labs had not much more than concepts of their eventual products, they turned to familiar environments for direction. For Tarun Mehta and Swapnil Jain, that was their alma mater, the Indian Institute of Technology, Madras; and for Dhananjay Dendukuri of Achira Labs, it was his employer.

"We reached out to one of our professors in engineering design at IIT Madras and told him we wanted to build a battery and maybe a full vehicle and put in a lot of engineering effort doing that. He immediately offered to support us 100%," said Mehta, chief executive of Ather Energy that is set to roll out its $340 smart electric scooter this year. "If we hadn't had that support, our starting would have been 10x harder and 10x longer."

Dendukuri got support from Connexios Life Sciences, where he was a lead scientist; the company incubated his microfluidics startup so he could tinker and experiment with developing a low-cost diagnostics device.

That's lesson 1 on building a product startup, an area where India has a woefully poor record. Unlike software ideas, even simplistic ones, that can find ready backers, products have to climb a steep arc to prove their worth in a market not known for its manufacturing prowess. Products have to evolve from being a concept to a physical prototype and undergo various iterations before they can hit the market. And then the market has to want the product. Which is why getting that first person to believe in your idea and give you the space to experiment is critical.

Product entrepreneurs should gain in-depth understanding of the problem that they want to solve and its magnitude, and determine how it can be solved best. Niche problems might seem exciting but may not earn your startup the money it will need to sustain.

"We never started to become a medical device company. We felt that the magnitude of preventable blindness was really high. Then we went about understanding the limitations. Why is there such a high prevalence of preventable blindness?" said K Chandrasekhar, CEO of low-cost eye screening devices maker Forus Health. "We were then convinced that technology is the only way we can solve this problem."

The next steps are finding a core team and raising funds, because developing a product requires money. While seeking funds, have a working prototype ready. "As a hardware company, one of the trump cards that one has is to be able to show a prototype—an actual, tangible, physical thing. The impact that a physical product has is unparalleled. You cannot do the same by making presentations," said Ather's Mehta.

Since the product startup sector is only picking up now, finding core team members might need time along with foresight and ingenuity. Find people who are as passionate about the field you are working on as you are. Dendukuri of Achira Labs went to various colleges to deliver lectures and took in members who seemed passionate about microfluidics. "I went to IIT-Delhi to give a talk. Somebody there was doing his Ph.D in microfluidics. He attended the talk and then he's been with me through the entire journey," said Dendukuri. "The other important pick we made was through a scientific adviser."

Dendukuri offers more suggestions:

CONCEPT TO MARKET

1. Prototype: After deciding on a problem to solve, build an initial version of the concept that you can demonstrate at conferences and to investors

2. Research: Is there a market for your product? What is the scope of opportunity? Who are the likely competitors?

3. Build core team: Hire people with expertise in specialized domains

4. Raise funds: Get investors to believe in your product

5. Update prototype: Keep innovating and rectifying defects in earlier versions

6. Build vendor network: Find vendors aligned to your vision

7. Decide price: Pricing has to suit the market while not undercutting topline

8. Go to market: Develop a steady distribution network

Scout for Indians abroad who might be seeking interesting options at home to come back to. Non-resident Indians working abroad come with interesting expertise and cutting-edge knowledge, he said. Also, hire consultants or advisers from the first generation of hardware companies as they will have experience in managing an entire product lifecycle.

Finding the right vendors for different components is a challenge of its own. Understand the sourcing ecosystem and reach out to vendors who can understand your vision and will want to be involved for the long haul.

Akash Gupta, chief technology officer of robotics enterprise GreyOrange, holds one advice from the company's experienced Germany-based cofounder Wolfgang Höltgen close to his heart—there is a lot of difference between cheap and economical. "There is a big difference between a cheap product and a viable product. Viable products cater to the market, not the cheap. This was drilled into us by Wolfgang. A lot of our supply chain is from Germany, Taiwan and Japan, so it is possible to make products which have really good components and still be viable enough," Gupta said.

It is critical to get the pricing right. Chandrasekhar reached out to experts in the eye care industry to determine the pricing for Forus's ophthalmic imaging devices. "We were able to understand what would be a typical price a customer would be interested (to pay) and we got a particular price point. That price point was definitely not very profitable for us to sell at that point of time, but then we went about announcing it at that price point, which helped us to make inroads into the market," he said.

Finally, as all success stories go, it is the underlying passion that can take you through the arduous journey of building a product startup. "I started the company pretty late. Before that I was into racing. We named the team as Tork and remained in that space for four-and-a-half years. And then I had a bit of free time (when) I built a prototype," said Kapil Shelke, founder of Tork Motorcycles, a Pune-based maker of electric motorcycles that is backed, among others, by Ola cofounders Bhavish Aggarwal and Ankit Bhati. "The perception of electric motorcycles was not good then. So I wanted to build and show that it is possible. It worked well."

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ILLUSTRATIONS: ANIRBAN BORA

POINTERS FOR SUCCESS

- **Find** a mentor or incubation centre
- **Solve** a big problem, not a niche one
- **Develop** working prototype before seeking funds
- **If you are** building an entirely new product, it is best to own the full technology stack
- **Get to** know the support and supply ecosystem in your city
- **Always know** which part of your technology is patentable. Patent at least in India
- **Outsource or** own the manufacturing process
- **Keep a** keen eye on the materials you use
- **Keep design** simple, robust and repeatable
- **Hire people** who have got their hands dirty with similar work

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From Frog Dissections to Chem Reactions, an App for Everything

Hot Startup

Labinapp

Labinapp caters to 20,000 schools and has more than 250 science experiments on its platform

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Bengaluru: While in school, haven't you wanted to try the 'out of bounds' chemicals in the lab without blowing stuff up? Or try by yourself the simple pendulum experiment to check if reducing the length of the pendulum could affect the speed of motion?

Labinapp, a 3D virtual laboratory startup, is making this possible for school kids by simulating science experiments. Focused on creating a virtual learning environment representing science laboratories, the Hubali-based startup says it is solving a larger problem of lack of science labs in schools.

Pavan Shinde, a computer science engineer, cofounded Labinapp with his engineering college batchmates who were keen on designing and building games. A video report that said 75% of the schools in India do not have science labs spurred the team into building a virtual science lab platform using computer graphics.

"Students are generally interested in games like Temple Run and Angry Birds. We wanted to build a science experiment platform using similar computer graphics," Shinde said.

The startup offers a license-based programme that includes experiments in general science, physics, chemistry and biology for class 9 to class 12.

A 3D simulation makes a theory or concept come alive for students, allowing them to experiment, explore and visualize different possibilities and learn from their outcomes in a safe environment.

"It is one thing to learn what friction means theoretically, but to observe how friction affects a steel block on a wooden table or a glass rod on a glass table… imagine the level of in-depth learning it provides," said Shinde.

For a biology experiment like frog dissection, showing a picture of its anatomy is not sufficient. Using Labinapp, students can observe the dissection virtually.

"A practical experiment in a lab is only done once. If a student has queries or wants to go through the dissection process again before the exam, Labinapp helps," said Shivu Sarkar, professor at Srushti PU Science College in Dharwad, Karnataka that has a tie-up with Labinapp.

The company has now pivoted from its initial business model of partnering with schools, and now partners with education technology providers and publishers to sell its content through a licensing model. It has partnered with smart classroom solution provider Tata ClassEdge and Karnataka State Council for Science and Technology.

Labinapp caters to 20,000 schools across India and has more than 250 science experiments on its platform.

"The team at Labinapp is solving a large-scale problem in education by providing simulation of science experiments to schools, especially in semi-urban and rural areas. As investors, we also liked the fact that their solution was largely scalable in the ed-tech space," said Srikrishna Ramamoorthy, partner at Unitus Seed Fund.

In 2014, angel investor and founder of ImagesBazaar, Sandeep Maheshwari, invested Rs 20 lakh in Labinapp. The startup also received seed funding of ₹60 lakh from Unitus and Madan Padaki of Sylvant Advisors.

Children practise on Labinapp learning module at a partner school

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Deal Corner

IoT Startup Einsite Raises Seed Round from KPCB Edge

Bengaluru: The absence of a market-ready 'smart' solution for industry verticals was the driving force for brothers Rajiv and Anirudh Reddy to start Einsite. The California-registered firm, which designs Internet-of-Things (IoT) based solutions for the construction and mining industries from its development centre in Hyderabad, has raised a seed round from KPCB Edge. KPCB Edge is the early-stage investment arm of Silicon Valley based VC firm Kleiner Perkins Caulfield Byers which has backed technology companies like Uber, Amazon and Snapchat, among others. "IoT is very fragmented and usually relies on customised solutions for each specific vertical which long-drawn and expensive process which hasn't been tested earlier. With our product we are focused on bridging the data flow across locations in the verticals of highway construction and mining," says Anirudh Reddy, 23, CEO of Einsite and a graduate of Stanford University who has previously worked at the global construction company, Bechtel.

The current round of funding in the form of uncapped convertible notes in the range of $100,000-200,000 will help Einsite get its product ready for the market by early 2017.

"We have outsourced the assembly and manufacturing of the product. Some of the modules and sensors are sourced from China while the fabrication of basic chip-board and boxing is done in India," says Reddy. Being piloted with Gayatri Projects in Hyderabad, Einsite is in talks with other construction companies in India apart from a few clients in the Middle-East. The company is in discussions with other early stage investors to scale up the production..

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ShabdaNagari Mops Up Bridge Round

Bengaluru: Hindi-language focused social media startup ShabdaNagari has raised an undisclosed amount in bridge round from a group of investors including Yogesh Chaudhary of Jaipur Rugs, Anirudh Damani of Artha Energy Project, Abhimanyu Singh of TaskUS among others.

The deal was facilitated through deal-making platform ah! Ventures.

"Competition in this space is scarce and still catching up. ShabdaNagari has a number of benefits on ease of access and usability, five different input options for typing Hindi on the platform," says Amitesh Misra, cofounder of the one year-old company which has close to 10% of the traffic coming from outside India. With close to 66 crore Hindi speaking individuals in India of whom fewer than 10% can effectively communicate in English, the platform is targeted mainly at Tier-2 markets.