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Getting Out of the Lab and Into the Land: Commercializing Technologies for Social Impact

The summer heat of rural Tamil Nadu, India, was beating down on me as I stood near a roadside restaurant. A crowd was beginning to form as more people came out of the woodwork to warily watch three men attempting to rope a tall metal pipe to a gangly tree. The pipe was a component of an improved teakettle stove, which the newly minted celebrities were demonstrating for the restaurant owner. The teakettle stove, which was developed by a nonprofit organization in Bangalore, was supposed to burn wood more efficiently than other stoves. The rope-tying men were hoping that after five days of using the new technology, the restaurant owner would be convinced enough by his fuel savings to purchase it.

This stove was one of many different social-impact technologies that I saw that summer in India. I had also encountered low-cost solar lanterns that not only illuminated but also charged mobile phones, a rural ATM machine that made cash more accessible to remote populations, non-electrical infant warmers, household water filters, inexpensive prosthetics for amputees, drip irrigation systems for farmers, and smokeless cooking stoves that reduced indoor air pollution. Social-impact technologies like these are moving more and more into the limelight as a potential way to address the global problems of water and electricity service delivery, health improvements, and poverty alleviation.

Designers and supporters of social-impact technologies come from all walks of life, all over the world. Both MIT and Stanford University boast programs that intertwine "design for the other 90 percent" into their coursework. The U.S. Environmental Protection Agency hosts its annual P3 Student Design Competition for Sustainability to fund innovative new technologies. In India, Villgro finds and incubates local inventors of social-impact technologies.

Social-impact products have also made headway in mainstream media. In 2010, Amy Smith, the founder of MIT's D-Lab, was named as one of *TIME* magazine's 100 Most Influential People. Julia Roberts and Hillary Clinton both pledged their support for the Global Alliance of Clean Cookstoves—an initiative led by the United

The Afghanistan Clean Energy Program has evaluated dozens of solar lanterns for use in rural Afghanistan, providing more than 7,000 to Wakhi, Kyrgyz, and Kuchi nomadic peoples in northern Afghanistan, as well as Hazar and Pashtun communities in Central and Southern Afghanistan.
Photo: Robert Foster/Winrock International

Nations Foundation that combats climate change and poverty through new cooking technologies for rural areas.

The appeal of technology-based solutions for the bottom of the pyramid is understandable. Compared with the slow, invisible solutions of public policy and community mobilization, social-impact technologies are tangible manifestations of hope that have an immediate social impact.

The Perennial Problem of Dissemination

Their promise aside, no one has painted the big picture of how to move social-impact technologies from the lab to the land. During E.F. Schumacher's "small is beautiful" Appropriate Technology movement of the 1970s and 1980s, philanthropic and government-funded initiatives failed because of limited funds, limited scale, low-quality products, and poor management. After management professor C.K. Prahalad proclaimed that there was a "fortune at the bottom of the pyramid" in 2004, the paradigm shifted toward a market-centric view. Companies calling themselves "social enterprises" began manufacturing, marketing, selling, and distributing social-impact products to the poor. By using business models, social enterprises attempt to be accountable to customers, transparent to shareholders, and financially self-sufficient to continue pursuing their social missions.

Social entrepreneurial efforts are being recognized by international organizations as innovation-based, market-oriented solutions that hold the promise of scaled social impact. The

World Economic Forum's Technology Pioneers of 2012 includes four start-ups that deliver a product or service for the bottom of the economic pyramid. USAID's Development Innovation Ventures awards grants to compelling new development solutions, many of which are based on new technologies for the poor.

But social enterprises are no panacea to moving social-impact technologies into the hands of the people they were designed to benefit. The bottom-of-the-pyramid market is riddled with obstacles. For example, there are more than 627,000 Indian villages spread over 3.2 million square miles. These villages face financial hardships, difficult living conditions, and limited access to new knowledge. In many cases, social-impact technologies are still too expensive for rural end users, and they require intensive, in-person marketing. The costs of acquiring new customers are sky-high.

Problematic operating environments also pose obstacles to technology-based social ventures. It is difficult to find startup funding that does not require social enterprises to produce immediate results. In the Indian Social Enterprise Landscape Survey conducted by Intellecap, a social sector advisory firm, 44% of social enterprises named financing as their main challenge. Only 37% of social enterprises that sought funding received enough. Additionally, unsupportive regulatory environments overburden small- and medium-sized enterprises with red tape.

Technology-based social enterprises that engage customers through the market have potential, but they face numerous obstacles. What needs to be done?

Innovating Entrepreneurial Efforts to Change the World through Technology

Based on my experiences in rural India, I believe that technology-based social enterprises and others working at the bottom of the pyramid need to rethink doing business in these ways:

Branding: These are NOT technologies for poor people

Who wants to be told that they are poor? Nobody I've met. So why do so many social enterprises push their technologies as products for poor people? Social-impact products should be marketed as desirable, aspirational products. End users should want to invest in them. This does not mean that social enterprises should use marketing gimmicks. They should just pay attention to managing their brands differently.

Pricing: $30 a month is too expensive, but $1 a day is affordable

One of the greatest takeaways from microcredit and pay-per-use shampoo sachets is that pricing innovations are required to sell anything at the bottom of the pyramid. If a social enterprise requires a poor customer to buy a solar lantern, in full, with cash, then solar lanterns may not sell. A rental or credit scheme is much more cost-effective and appropriate for such a customer's income stream. Creating microentrepreneurs who rent out technologies is another way to generate income and improve livelihoods. This model has already been successful for solar lanterns and mobile-phone chargers in India.

After-sales Service: Prevent rural areas from becoming dumping sites for broken technologies

Working technologies will inevitably fail. When a social-impact technology fails, there can be consequences. First, the technology ceases to bring social benefits. Second, it sucks money out of a population that is already poor. Third, it becomes garbage—thrown out onto the road. (I have seen

improved cooking stoves sit broken in the corners of rural Indian kitchens.) Fourth, it wrecks the social enterprise's brand, shakes customer confidence, skews perceptions around new technologies, and distorts the market for new entrants. For example, I learned that solar lanterns are gaining a bad reputation in Chennai's peri-urban areas because too many low-quality, quick-to-break lanterns have been imported from China. Social enterprises selling higher-quality lanterns have difficulty convincing potential customers of their improvements.

After-sales service is just as important as initial sales because it sustains the long-term impact and sales of social-impact technologies. It also gives social enterprises an opportunity to interact with their customers, creating a bidirectional learning experience that will improve product design and quality. This would be a huge improvement on the current situation, as thorough failure rates and failure analyses for a wide range of social-impact technologies are not available.

Ecosystem: Put the "social" back into social entrepreneurship

Moving social-impact technologies from the lab to the land requires building up an ecosystem that is bigger than one social enterprise. Social enterprises must partner with other businesses and organizations to share resources like local knowledge and community connections. Social enterprises should involve organizations from across sectors (private, public, and social) at all levels (from grassroots to international). They can be catalysts for building robust ecosystems around themselves, and these ecosystems can ultimately support rural customers. One example is SELCO, a company that installs solar home lighting systems in southern India and is famous for forging financial relationships. When the company began, rural banks were not financing any solar lighting technologies, especially for risky low-income customers. SELCO convinced a bank to offer the nation's first solar-consumer loan program. This had a snowball effect on solar-industry financing and helped rural farmers segue into formal banking.

Private investment markets can play a key role in financing technology-based social enterprises. For example, India has a handful of social-impact investment firms, like Omidyar Network and Aavishkaar, which provide patient capital to social enterprises. Additionally, India's National Innovation Council has proposed a new fund that will be supported by the government, private investors, philanthropists, and bilateral and multinational institutions. These are pioneers, and more financing is needed.

Moving Beyond Technological Invention toward Business Innovation

Worldwide, socially conscious engineers are creating technologies that improve the livelihoods of low-income households. However, technological invention is not enough. Technologies must get into the hands of end users, or else they are designed in vain. If social entrepreneurs and bottom-of-the-pyramid organizations begin doing business differently, market mechanisms can widely disseminate these products. Only through these innovations can social-impact technologies impact millions of lives as intended.

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