CLOSING THE INFORMATION GAP WITH AN ESSENTIAL MARKETPLACE FOR SOCIAL IMPACT TECHNOLOGIES: THE CASE OF ESSMART

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INTRODUCTION: GAPS IN THE TECHNOLOGY-FOR-DEVELOPMENT ECOSYSTEM

After decades of failed grassroots-level poverty alleviation initiatives, social impact technologies — also known as “frugal innovations” and “appropriate technologies,” among other names — have grown increasingly popular worldwide, developing innovative solutions to address a wide range of technological and societal challenges. These include treadle pumps and drip irrigation systems for low-income rural farmers, bicycle and solar-powered mobile phone chargers, non-electric water filters, and off-grid solar lighting solutions, among others. Through the engagement of design competitions and social entrepreneurship challenges, these technologies, which are explicitly designed for Bottom of the Pyramid (BOP) end users, are anchoring the global technology-for-development ecosystem.

With this growing emphasis on BOP end users, the idea of “design for the other 90%” has been described as a “growing movement.” Paul Polak, founder of International Development Enterprises and author of Out of Poverty, describes the current product design situation like this: “The majority of the world’s designers focus all their efforts on developing products and services exclusively for the richest 10% of the world’s customers. Nothing less than a revolution in design is needed to reach the other 90%” (Sonuparlak, 2011). Globally, there are a host of organizations, foundations, and academic institutions that support the invention of technologies for development and the social enterprises that are supposed to bring them to market. These include The Rockefeller Foundation’s Centennial Challenge, the Dell Social Innovation Challenge Technology Award, the Ashden Award for sustainable energy projects, and USAID’s Development Innovation Ventures Program. Universities have adopted these initiatives as the core curricula within some programs, such as MIT’s D-Lab and Stanford’s Entrepreneurial Design for Extreme Affordability.

Many of these technology-for-development initiatives are also taking place in India. For example, the first ever TATA Social Enterprise Challenge was hosted at IIM Calcutta in February 2013. After a month of mentoring and a week of pitching, the two winners were announced. The first was Greenway Grameen Infra, the manufacturer of an improved biomass cooking stove that reduces fuel consumption and smoke emissions. The second was Ottoclave, an affordable, speech-enabled, pressure cooker-based autoclave that sterilizes hospital instruments. These are supposed to be two of “India’s most promising social enterprises” (TATA Social Enterprise Challenge, 2013). Sam Pitroda’s National Innovation Council espouses “frugal cost” products that are affordable for low-income citizens and seeks to foster an “innovation eco-system across domains and sectors to strengthen entrepreneurship” (National Innovation Council, 2010). Pitroda is also the Honorary Chairman of Action for India (Action for India, 2012), an organization with the goal of “scaling social impact through technology.” In early 2013, winners of its Growth Prize included NURU Energy, a company that designs and manufactures affordable solar lights. In April 2013, IIM Ahmedabad’s Centre for Innovation, Incubation, and Entrepreneurship and Village Capital hosted the first India-based accelerator program for technology-for-development, for-profit start-ups (Village Capital CIIE, 2013).
While it is impossible to dismiss the contributions of well-intentioned inventors and engineers, it is necessary to address the gaps in the technology-for-development ecosystem that technology itself cannot fill. Scholars and practitioners, including the authors of this paper, have already acknowledged the first gap: the distribution of social impact technologies (Jue, 2012a; Jue, 2012b). Traditionally, the distribution of life-improving technologies has been left to nonprofit organizations or the manufacturers themselves. However, non-profits generally suffer from limited scale, poor branding, and a strong disconnect between their funders and beneficiaries. Further, manufacturers lack the expertise or resources needed to execute a proprietary distribution model.

Distribution is generally an unrecognized and underfunded problem. However, the tide is shifting slightly, as a handful of social enterprises addressing this problem are springing up in developing regions all over the world, including regions in India. Some attention and funding are being earmarked for the issue, too. For example, a distribution-focused social entrepreneurship competition has even been inaugurated recently. Announced in March 2013, the D-Prize focuses exclusively on “better ways to distribute proven life-enhancing technologies” (D-Prize, 2013).

However, distribution is just the first gap in the technology-for-development ecosystem. The second gap – the information gap – exists between technology designers, funders, distributors, and end users. The information gap has equally heavy implications on the social impact that technologies can deliver in the development context.

In this ecosystem, asymmetric information abounds because there is no real market for these products. When nonprofit organizations distribute social impact technologies, they do not give their beneficiaries a choice in the products available to them. They may also offer products at subsidized prices, which arguably affects how end users perceive product values. When a manufacturer attempts to distribute its products through a proprietary distribution channel, the company only pushes its own product. Unless a similar manufacturer is also pushing its product in the same market, there is little opportunity for direct, head-to-head, competitive offerings. There are no options to choose from.

A transparent, competitive, economically-incentivized marketplace for social impact technologies has the potential to revolutionize the technology-for-development ecosystem. Not only would a marketplace give end users the opportunities to choose what they want based on the product’s perception of value, functionality, and price, but a competitive marketplace would incentivize designers to create better, more desirable social impact technologies that end users would actually purchase when given the choice. A marketplace would also create a platform for data collection on the technology preferences and buying habits of end users – data that is currently unavailable because products are usually pushed through unsustainable or noncommercial channels that do not position similar technologies directly against each other.

This case study examines the possibility of marketplace strategies for the dissemination of social impact technologies, illustrating the potential of a social enterprise to better assess and alleviate the current shortfalls
of distribution and market research. Essmart, a social enterprise operating in Tamil Nadu, India, addresses the challenges in both the distribution and the information gaps in the technology-for-development ecosystem through a highly transparent and engaging closed-loop feedback system. Within this feedback system, a more egalitarian marketplace emerges, benefitting stakeholders from the beginning to the end of the supply chain. In this marketplace where products are sold at market value, Essmart encourages end users to become demanding customers whose opinions and preferences matter, thus engaging end users with distributors and producers for better products and services.

When collected and treated as vital data, end users’ buying decisions and direct feedback become pivotal in motivating manufacturers to design better technologies for social impact. In this paper, the authors illustrate the opportunities of market research, pointing out the possibilities that Essmart has imagined through its closed-loop feedback system, then highlighting the ways in which these strategies can serve as a model for others operating in the technology-for-development space. When shared across stakeholders, this data will greatly multiply the effectiveness of social impact technologies. There is great potential for social enterprises to encourage innovation and empowerment in these processes to strengthen communities and alleviate technological and economic deprivation.

SOCIAL IMPACT TECHNOLOGIES IN BRIEF

Although the phrase “technology for development” sounds hip and cutting edge, the concept of intentionally inventing technologies for grassroots-level international development is anything but new. For the past 60 years, nonprofit organizations have been designing “appropriate technologies,” which are small-scale, decentralized, labor-intensive, energy-efficient, environmentally-friendly technologies that are “appropriate” for local conditions.

Economist E.F. Schumacher is generally named the father of the Appropriate Technology movement (Schumacher, 1973), which was created in response to the negative effects of large-scale, capital-intensive production and industrialization methods that were occurring in developing regions after the Second World War. By the 1970s, it had become evident that efforts to achieve economic growth through capital-intensive methods of import substitution were failing. In developing countries that attempted ambitious industrialization, the growth of non-agriculture and urban employment had not matched the total economic growth rate or the growth in surplus rural labor (Willoughby, 1990). In certain contexts, only a handful of new jobs were created, and this resulted in emerging urban islands of high productivity but neglected agricultural peripheries (Akubue, 2000).

The situation, coupled with Gandhi’s visions of Gram Swaraj and the Sarvodaya movement, encouraged Schumacher’s thinking about alternative forms of development that would occur alongside industrialization. He advocated for

1 Self-sufficient but inter-linked village republics with decentralized small-scale economic structure and participatory democracy.

2 Literally meaning “universal uplift” or “progress for all,” this became the term for Gandhi’s ideal political philosophy.
the creation of non-agricultural jobs in rural areas, which would ameliorate unemployment and reverse rural-to-
urban migration. To support production in rural areas, Schumacher came up with a new breed of technologies
called “intermediate technology”: labor-intensive, suitable for small-scale operations, simple to use, and financially
accessible for farmers. Compared to expensive, imported, capital-intensive technology that replaced jobs, intermediate
technology would create more jobs. Consequentially, intermediate technology would jumpstart a sustainable process
of income generation and wealth accumulation in rural areas through small-scale production.

Between the 1960s and 1980s, the Appropriate Technology (AT) movement produced countless widgets for
development. By the mid 1970s, the average number of appropriate technology organizations created every three years
almost quadrupled from the prior decade. The umbrella of appropriate technology was broadened to more fields,
including energy, agriculture, and urban renewal (Leland, 2011). However, by the time the 1980s rolled around, the
AT movement was already dying down. Funding from governmental organizations had never been much, and donor
money was drying up because of the ensuing debt crisis and developing countries’ push for an export-orientation
that neglected the poor. Additionally, because of its small scale and focus on collaboration with local groups, the AT
movement was being seen as a disfavored, “passive” method of aid (Pursell, 1993).

The movement was also dying down because technology development, not dissemination or implementation, was the
primary focus. Engineers were designing “better mousetraps,” but no one was using them (Smillie, 2000). Participants
of the AT movement naively assumed that appropriate technology would be readily adopted once end users saw the
technology’s utility. By not realizing that appropriate technologies, despite their simple designs, also relied on support
like training, maintenance, and administrative assistance, organizations were setting up their own demise (Leland,
2011).

In the early 2000s, at the tail end of the AT movement, some organizations attempted to address technology
dissemination by practicing aspects of participatory development. This gradually morphed into participation by co-
creation, where community members became involved in idea generation, concept evaluation, technology design,
fabrication, testing, and evaluation (D-Lab, 2009). The hope was to ensure technology adoption and effectiveness by
involving end users in the design process. While these efforts resulted in benefits for the involved communities, the
decentralized, small-scale design and production processes were not easily scalable. Neither were they sustainable, as
they required larger amounts of donor funding and volunteer work to operate.

Despite the Appropriate Technology movement’s eventual death, the movement did leave a legacy for today’s bottom-
up technologies for development and produced lessons for modern-day innovators – namely that scalable, financially
sustainable models for technology design, dissemination, and information-gathering regarding these technologies are
required to affect bottom-up change through technologies at the base of the pyramid.
THE IMPORTANCE AND DIFFICULTY OF MARKET RESEARCH FOR SOCIAL IMPACT TECHNOLOGIES

Market research and data analysis is a growing practice in countries like the United States. In America, almost every major retailer, from grocery chains to investment banks to the United States Postal Service, has a “predictive analytics” department devoted to understanding not just consumers shopping habits but also their personal habits, so as to more efficiently market to them (Duhigg, 2012). A New York Times piece written by Charles Duhigg, author of The Power of Habit: Why We Do What We Do in Life and Business, describes how the large retail chain, Target, uses market data on buying habits and the science of habit formation to execute targeted marketing campaigns that increase sales. For example, the company could identify a pregnant woman based on the products that she buys. Then it would launch very targeted advertisement campaigns to shift her buying habits toward the Target brand. After heightening its focus on items and categories that appeal to specific segments, Target’s revenues increased from $44 billion in 2002 to $67 billion in 2010 (Duhigg, 2012).

Companies have begun to see the importance of knowing and understanding customers’ buying habits so that the companies can anticipate needs and increase sales. Market research is an activity that businesses large and small (start-ups included) will fund (Shread, 2013). There already exist huge bundles of data on consumer habits and interests that can be found in a wide variety of formats. In general, larger businesses are more capable of gathering this data for analysis. For example, some of the largest corporations in a number of food and drink industries have invested enormous sums of money to perfect the flavors and appearance of their products. In his research on the food industry, Michael Moss identifies a number of cases in which major food corporations utilize market research. Through a series of taste tests and surveys, these major food and drink conglomerates pinpoint the precise ingredients that customers enjoy. They have even gone to the extent of subcontracting market research to think tanks and scientific institutes such as the Monell Chemical Senses Center to determine ideal flavors and tastes (Moss, 2013).

Market research provides companies with particular advantages over their competitors that can produce tangible results. Most importantly, these studies ensure that the company is providing the best product or service that it is capable of offering. With more meticulous approaches, market research practices can look very closely into the mindsets and identities of consumers, explore the causality of their spending habits, and use this information about habits to cater more closely to consumer needs. Although the levels of detail and focus may vary, quality market research efforts – regardless of scope or scale – can prove highly fruitful for any business or organization. The ability to reflect on the opinions, feelings, and spending habits of customers can offer businesses the opportunity to learn and improve upon their abilities to deliver.
The goal of market research is to bring the very best to customers, which will in turn improve a company’s bottom line. Because of this, market research naturally focuses on where the money is: customers who are willing and able to pay. Until recently, rural India has been ignored as a market. However, with increasing purchasing power, rural India is emerging as a huge market that companies cannot ignore. According to the National Council for Applied Economic Research, rural India accounted for about 22 percent of computers sold, 29 percent of refrigerators, 32 percent of cars, and 46 percent of televisions (Lakshmi, 2013). As a result, market research companies like Hansa Research India have begun specializing in studying rural India, transforming their urban-centric research tools into tools that can map and measure rural aspirations (ibid.).

The drivers of this market research are typically large corporations seeking to sell into rural areas, such as LG India, the South Korean multinational company that sells consumer appliances like televisions, and US-based GE Healthcare, which has tried tailoring its products for the hinterland. Although there exist a handful of Indian companies like Hindustan Unilever that are relatively successful at selling into rural markets, their product mixes of primarily fast moving consumer goods (i.e. soaps and shampoos) do not require as much market research as, for example, consumer appliances, white goods, or products that are lesser known in rural markets.

In the current scenario, social impact technologies do not benefit from any abundance of market research and data. Most of these technologies are relatively new and conceptual for rural India. As is such, there are no historical data to be collected. Additionally, these products have generally been distributed by nonprofit organizations as opposed to being available in a commercial market, so there is no data about consumer demand, willingness-to-pay, or perceived economic value. Nonprofit organizations are generally more concerned with program implementation (e.g. providing solar lanterns to beneficiaries) than collecting feedback on the products. Additionally, within the technology-for-development pipeline, there is considerable competition-based grant funding to publicly recognize and financially support the invention of new, innovative products. There is little incentive to collect end-user opinions and market feedback on current technological offerings, particularly since these products are distributed through non-market means. As a result, designers in the technology-for-development space are prone to reinventing the wheel. For example, the late international development specialist, Alice Amsden, identified the similarities between small-scale technologies that were developed in the late 1950s and today (Amsden, 2012). In the popular novel entitled The Ugly American (Lederer, 1958), an engineer named Atkins offers his technical assistance with small-scale projects that include a simple bicycle-powered water pump. Similar bicycle-powered technologies are still designed by young engineers today.

The authors of this paper are aware of two current efforts to evaluate social impact technologies. The first is Kopernik, which coins itself as a “Technology Marketplace” for non-governmental organizations to purchase social impact technologies for distribution to their beneficiaries (Kopernik, 2010). As part of the relationship between Kopernik and the NGOs, the NGOs must submit feedback reports about the technologies. The second effort comes out of MIT’s D-Lab, which in conjunction with the university’s Department of Urban Studies and Planning received a grant from the US Agency for International Development (USAID) and Higher Education Solutions Network (HESN) in 2012. The grant is being used to establish the International Development Innovation Network (IDIN) and Comprehensive Initiative for Technology Evaluation (CITE). CITE activities, which
are currently under development, include technology evaluation protocols and reports and product design challenges (CITE, 2012). Both Kopemik and CITE evaluate social impact technologies through user interactions and product design. There is no mechanism to collect market-based feedback, which could prove more helpful.

INTRODUCING ESSMART, A DISTRIBUTION CHANNEL THAT CLOSES THE FEEDBACK LOOP

Essmart is a new social enterprise that focuses on scaling up and commercializing social impact technologies to peri-urban and rural households, beginning in Pollachi, Tamil Nadu, in August 2012 (disclaimer: the authors of this case study are mostly founding members of Essmart’s team). Although Essmart’s operations are relatively young, the company is moving quickly because of the founding team’s ever-expanding research on the topic of social impact technology dissemination through a market-based model in southern India. As a process innovation, Essmart takes existing technological innovations to the people who are intended to benefit from them. In addition to marketing, distributing, and servicing social impact technologies, Essmart collects localized data about consumer preferences, demands, and needs. This data collection and sharing process creates a closed-loop feedback system around social impact technologies, which supports the entire innovation-for-development ecosystem.

The enterprise’s beginnings are rooted in its two co-founders’ personal experiences with technologies for development. While studying at MIT and Harvard as undergraduates, Diana Jue and Jackie Stenson, who are contributors to this case study, enrolled in engineering courses that exposed them to grassroots development efforts through design. Their field experiences in India and Africa resulted in transnational Master’s research at MIT and the University of Cambridge, where they both studied the issues around introducing new products and technologies into low-income rural markets. Essmart was born when the co-founders met in the fall of 2011, and the idea and team were nurtured in Boston’s innovation-for-development space before transitioning into India’s social entrepreneurship ecosystem.

The Essmart team saw that despite all the activity around inventing social impact technologies for development, designers and development professionals have little data that could support a financially sustainable marketplace for these products. For example, since no one offers end users the choice between a d.light solar lantern and a Greenlight Planet solar lantern, end users, designers, and investors do not know which is preferred nor why end users have these preferences. This affects the invention of appropriate technologies and investment into companies with products that have commercial potential.

To support the creation of a marketplace for these types of social impact technologies, many questions still need to be answered. These questions include the following: What are baseline design criteria for technologies
like water filters, improved cooking stoves, and solar lanterns? What are affordable price points? What are preferred product features, and what are end users' willingness to pay for them? How do market preferences differ by region? How do end users use these new technologies, and how do they fail? What are other existing problems that could be addressed through a technological solution but are not currently known to designers?

Through its distribution system, Essmart aims to answer these questions. At its core, Essmart creates a channel for life-improving technologies to move from manufacturers into the hands of people who can benefit from them. The social enterprise leverages India’s existing retail shop network of 14 million strong, where trust-based buying relationships are already established among 192 million households. As determined by surveys that were taken during January 2012 by Essmart, these shops do not currently sell social impact technologies because they do not know about them, where to get them, or how to service them.

Essmart addresses these shops’ knowledge gaps by aggregating a catalogue of in-demand, high-quality, life-improving social impact technologies, demonstrating the technologies in local shops, distributing them, and ensuring after-sales service through facilitating manufacturers’ warranties. Just as Sears-Roebuck revolutionized distribution by bringing a catalogue of great products to every home in America, Essmart is revolutionizing distribution in India and creating a channel through which life-improving products can reach millions.

While Essmart moves products through this distribution channel, the company collects information about end users’ preferences, spending habits, technological needs, and experiences with the products. This information is gathered through discussions with shop owners and their customers during product demonstrations, periodic follow-up phone calls with technology end users, and end users who contact Essmart’s sales executives or head office directly and initiate the feedback process. In the future, this data will be packaged in the form of reports for designers/manufacturers, funders, and other interested parties in the innovation-for-development space. It is also provided back to end users so that they can make more informed buying decisions. These data serve as invaluable resources for Essmart in addressing challenges from the information gap.

RESEARCHING THE ROLE OF ESSMART IN PRACTICE

The co-authors of this case study are Essmart’s co-founders, members of the founding team, and a third-party researcher brought in to engage in fieldwork from an outsider’s perspective. Co-founder Diana Jue has been overseeing operations in southern India since August 2012, and co-founder Jackie Stenson has been fundraising from the United States while lecturing at Harvard University’s School of Engineering and Applied Sciences during the 2012-2013 academic years. Robert Weiss has been working with Essmart on Supplier Relations, and SelvanThandapani was brought on as the company’s first full-time employee from August 2012 until December 2013, first as the Director of Field Operations and then the Director of Products.
Matthew Pruter was recruited to provide a third-party perspective on Essmart’s operations, and he spent a week engaging in field research that enabled him to follow sales executives working for Essmart across several villages in Tamil Nadu. In total, he met and traveled to 15 shops in different villages, all located near the areas of Pollachi and Erode. During this period he was able to observe the sales, promotion, and engagement of Essmart products with shopkeepers and end users, discovering specifically the ways in which Essmart establishes and reinforces the strong connections across the supply chain, from village to village. In addition, he spent considerable time at the Essmart branch office in Pollachi, the central hub of Essmart operations and distribution within Tamil Nadu, overseeing meetings, phone correspondence for customer service needs, and sales executive trainings.

ESSMART’S PROCESSES FOR BRIDGING THE INFORMATION GAP

As Essmart has increased in scope and scale, the company has discovered a number of key strategies for bridging the information gap and developing a more inclusive and effective technology-for-development ecosystem. Through an extensive process of research and practice on the ground, the authors have identified the following strategies in this section as most pertinent to instilling a more cohesive ecosystem for producers and end users alike.

Identifying Technologies for Catalogue Inclusion

Essmart undertakes a highly multifaceted process when determining new products for its catalogue. Identification is paramount to the efficacy of Essmart’s services and products, and this sense of identification exists through both the end users and suppliers. First, end users define and explain their specific needs to Essmart’s sales executives. These sales executives then engage Essmart’s Product and Catalogue Development team to search for existing technological solutions that address these needs. Essmart’s team members are informed of these needs through multiple inlets. Shopkeepers inform sales executives of end user concerns that they receive, Essmart’s Product and Catalogue Development team learns from end users during follow-up visits to villages and phone interviews, and end users directly speak with sales executives during product demonstrations in shops and other shared village spaces. Since its operations began in August 2012, Essmart has received a number of technology requests from end users. These have ranged from a low-cost, reverse osmosis water filter (which is more desirable than a non-electric water filter that utilizes nanotechnology because it removes the salt taste) to a device that identifies leakages in cans of liquid petroleum gas (LPG). In some cases, such as that of the reverse osmosis water filter, the Essmart team has been unable to find a suitable solution. However, they have made this request known to product designers and hope to see one come through the product development pipeline.

In addition to end users providing feedback, suppliers also approach Essmart with their commercially available products for rural end users. These expanding connections between technology suppliers and Essmart underscore the fact that Essmart desires to position itself as the go-to distributor for a wide range of social impact technologies, especially those stemming from the technology-for-development space.
company has noted that these typically small technology designers and suppliers require a third-party distributor, particularly when the designers sit so far from their target markets.

**Product and Market Testing for Existing Technologies through a Rural Distribution Infrastructure**

For all of its suppliers, Essmart is able to test both the products and the markets for which the products are intended. Essmart’s competitive marketplace provides vital learned knowledge about the advantage and setbacks of each product in Essmart’s catalogue. When testing for technologies to include in the catalogue, the Product and Catalogue Development team, sales executives (most of whom also live in peri-urban areas), and shop owners regularly use the sample products in everyday scenarios to assess their usability and quality.

The shop owners are particularly vital in these testing new products for Essmart’s catalogue. Because they know how their customers (the technology end users) assess value for money, they are able to gauge whether the products will sell in the market given its price, features, and quality. Shop owners are also able to compare the new technology with the other technologies in Essmart’s catalogue. Additionally, the testing of these new products within shops serves as a platform to measure demand among end users.

Additionally, a small quantity of these products is purchased for sales and actual market testing. End user contact information regarding these 20 to 30 pieces is kept by the shop owners and collected by Essmart sales executives. Essmart’s Product and Catalogue Development team follows up with these first buyers by phone in predetermined time intervals to inquire about demographic information, product usage, product satisfaction, and overall feedback on the product and Essmart’s service. In many cases, these end users are also visited by the Product and Catalogue Development team. After a testing period of one month, a decision is made regarding whether to include the technology in the catalogue.

This follow-up on products under consideration for the product catalogue emphasizes Essmart’s commitment to gathering information about social impact technology design and marketing. Through direct feedback via phone calls and visits to shops and homes, Essmart is building a database of critical information about these products, their capabilities, and their desirability. When collected en masse with end user demographic information, these data can paint a picture of overall satisfaction for not only all of Essmart’s end users but also groups of end users, as defined by specific demographic characteristics. These data assist Essmart in identifying where educational outreach needs to be strengthened, determining how targeted marketing can be effective for future products, and collecting information for technology suppliers to improve their offerings.

During its first 1.5 years of distributing social impact technologies, Essmart has collated specific lessons around preferences and marketability of certain products. For example, several end users have requested more direct white light as opposed to the softer and dispersed yellow light that comes with one of Essmart’s most popular solar lanterns. These end users prefer white light because they perceive it to illuminate rooms better and, in some cases, their work requires white light (e.g. weavers who need to see the actual thread colors). Additionally, end
users also prefer products that have multiple features. These are seen as increased value for money; even though one solar lantern model costs twice as much as another, one reason it is more highly desirable is because it comes with a built-in mobile phone charger.

Of course, not every tested product makes it into the Essmart catalogue. General concerns shared by Essmart Product and Catalogue Development team, sales executives, shops, and end users include the following: cost and willingness to pay compared with other products in Essmart’s catalogue, perceived quality (in the case of solar lanterns, the perceived strength of the light, which end users often erroneously determine to be directly correlated with the number of countable LEDs), actual quality (ranging from internal wiring to water resistance to durability), product finishing, manufacturer’s warranty coverage and quality of servicing, availability in India (since Essmart is not yet in the position to import large quantities), and, since Essmart is a business, the distributor’s margins that Essmart earns.

Through Essmart’s interactions with a number of suppliers, the company knows that these qualities comprise the information that suppliers need to know. All of these concerns have the potential to inspire higher-quality, more usable, and more affordable products that more carefully meet the needs of end users. With the specific standards in place for distributors, Essmart and several companies can then go about examining trials for different prototypes.

**Product and Market Testing for Late-Stage Prototypes**

In addition to testing commercially available products for inclusion in Essmart’s catalogue, the company also addresses the information gap in the technology-for-development space by offering its distribution network to product designers who are working on later-stage prototypes. Socially-motivated university students, independent engineers, and start-up social enterprises require wider, longer-term market testing for their recently-designed products. Some have reached out to Essmart for the opportunity to test and iterate upon their products. These designers either find out about Essmart’s testing services through the company website or are put in touch through mutual contacts.

Even though Essmart’s shop network is relatively nascent and currently under development, US and India-based designers have already seen its potential for providing actual market feedback on innovative new products, as product designers often have a particular list of questions that they seek to answer. For example, what are the demographics of interested end users? How much would they be willing to pay for the product? In specific locations, what are the product’s competitors and/or alternatives to their use? What are the specific questions that end users ask when they first interact with the product? How does the shop owner feel about the product’s value and ability to sell?

Essmart allows designers to select how many pieces they would like to have tested across Essmart’s marketplace, the testing period length (from two weeks to six months), and the types of shops for testing (from the general types of products that are sold to the remoteness of the shops). The testing period consists of putting products in shops and frequently following up with shops and potential end users. Within two weeks of the end of the testing period, Essmart delivers a report that answers the designer’s initial questions.
Answers to these questions shape how the product is improved and marketed to different areas of rural India. Essmart’s involvement in this later stage of product design is crucial to ensuring that there is a market for these technologies when they are ready to be manufactured and commercialized at scale.

**Establishing Baselines for Social Impact Technologies**

Eventually, Essmart aims to establish standard guidelines for designing certain broad categories of social impact technologies, such as low-cost solar lanterns or improved biomass cooking stoves. These baselines will be based on the specific qualities, capabilities, and price points that end users actually desire in a product. For example, the current basket of commercially available solar lanterns feature a vast array of designs and features that designers believe end users will prefer and pay for. Essmart collects market data on what end users actually prefer and pay for. If Essmart is capable of distilling what features end users desire in solar lanterns -- and at which points they are willing to pay for these features -- then the company will be able to extract baseline features for solar lanterns that will succeed in a commercial market. These baselines will guide engineers so that they can more efficiently design or iterate upon current and future solar lanterns. If engineers know that solar lanterns should at least achieve X level of brightness for Y hours at Z cost, then they can design around these specifications from the beginning of their product development process. Additionally, if designers know that end users are willing to pay for specific features on higher-end solar lantern models, then they can more confidently design models that are appropriate for different end user segments. This is a more nuanced understanding of value for money, since in many cases, cheaper is not always better. End users will pay for what they value, even if it increases the offering’s overall price. As is such, designers need to know what these valued features are.

As Essmart’s catalogue widens and the company gains more experience marketing different types of products, Essmart will be in the position to determine baseline design guidelines across all categories of social impact technologies (e.g. improved cooking stoves and rechargeable fans) and other products designed for penetrating the rural Indian market. Each product type will necessarily have its own baselines for user preferences and price points, and these baselines may be able to ensure that the products are desirable to at least Essmart’s market. With such extensive collaboration and communication between technology end users and technology suppliers, Essmart can continue to directly connect end user expectations with supplier capabilities.

**SHARING INFORMATION WITHIN THE TECHNOLOGY-FOR-DEVELOPMENT ECOSYSTEM**

As seen in the previous sections, information sharing occurs at multiple junctions in Essmart’s process of closing the feedback loop in the technology-for-development space. As a distributor of social impact technologies, Essmart is a literal middleman. The company takes interest in every player in the ecosystem, from those who initiate the technology idea to those who deliver concrete social impact through the product. This involves the
Overall, the authors’ collective work and research experiences have provided a number of critical empirical findings while also pointing out, in clear detail, many of the major distribution and information gaps in practice and the power implications of alleviating these gaps. One striking trend that we have noticed is the growth of accountability and trust between end users and Essmart. All of Essmart’s activities are rooted in trust and communication through Essmart’s closed-loop feedback system, and it is this trust and communication that are actually improving the lives and aspirations of shopkeepers, end users, and village communities at large.

Trust-based relationships are central to all avenues of social activity in rural Tamil Nadu, as with many regions in India. However, in the case of these villages it is firmly entrenched in the economic activity and consumer habits of end users. From purchasing food to social impact technologies, every product must be one that end users can depend on. Unlike certain areas of North India, where a marketing executive for one of Essmart’s products has found that many end users are almost solely concerned with the aesthetic appearance of a product, end users in Tamil Nadu are worried very specifically about the performance and reliability of a product. They may ask repeatedly about issues of battery life, product longevity, and whether or not returns and exchanges are possible.

In many cases, these products can be more commonly characterized as products purchased for a family and for multiple users, rather than for just the individual interests of the paying end users. Most end users, for example, seek a solar-powered light that will provide their children with light so they may study for school in the evenings. The light does not simply suit the individual interests of the buying adult end user. Further, many of the end users will only buy or seek certain products if they know friends who have purchased the product or if a well-trusted shopkeeper has recommended the product to them. Thus, Essmart must work within a framework that understands not merely the individual end user who buys products but also the broader community for whom these goods have lasting impact.

The authors have seen a severe disconnect between technologies designed for impact and the little impact that they are actually making. As entrepreneurs and researchers, we believe that the sharing of this information within the global technology-for-development ecosystem -- whether through a monetized service or through a mutually beneficial working relationship -- has immense potential to nurture collaborations that can spur the ecosystem forward. With more connections, economies of scale can improve, prices can decrease, and more players and social impact beneficiaries can enjoy the possibilities of a wider economic ecosystem. With an increase in overall output and scope, more desired products will enter the market and enable end users to make the best decisions for products and services.

THE ROLE OF TRUST IN BRIDGING THE DISTRIBUTION AND INFORMATION GAPS

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In particular, it appears that end users’ main interest in the rapport-building process between them and Essmart is the presence of a guarantee or warranty on a product. Because Essmart’s products are relatively higher-end, they are seen as serious long-term investments. End users want to be guaranteed that their product will last them for a long period of time and/or that their product will be serviced immediately when needed. During shop demonstrations, Essmart sales executives inform end users and shopkeepers that each product has a warranty that promises money back or a new product should something faulty occur within a given time period. As realized by Essmart’s third-party researcher, in the main regional language of Tamil, end users understand and say the words “warranty” and “guarantee” almost interchangeably. Upon hearing the concept of warranties, with some explanation they could understand the difference and become interested in the higher level of trust and security that Essmart’s products and after-sales service could offer. Further, virtually none of the end users and shopkeepers had ever purchased a product with a warranty before, and practically all of these people had a story for Essmart’s sales executives about a faulty product that they had bought but had failed them. For these low-cost, low-quality products, end users have no means of getting their money back or a product replacement.

Essmart provides this unique warranty system through a carefully monitored system that follows every purchase through a series of connections via phone, computer, and also in person, which further reinforces a powerful trust-based system of distribution and information gathering. Whenever a product is purchased, the end user’s contact details are collected, and he or she is put in touch with the nearest Essmart distribution center so that he or she knows that Essmart is locally present, easily reachable, and available to its customers. In establishing this connection via phone, trust grows immeasurably between Essmart and its end users, for the branch office can receive multiple calls a week regarding product quality and faultiness, as well as suggestions and recommendations for future catalogue additions. This enables an abundance of market research directly from the end users and shopkeepers to Essmart, providing the company with invaluable information regarding a wide variety of end user details and ambitions. In turn, the end users and shopkeepers are able to more closely share with Essmart their concerns and queries for existing and future products. They demonstrate as serious a dedication to product quality and integrity as Essmart does across the rural supply chain.

Further, trust is continually built and reinforced through the work at Essmart’s multilayered office and from the everyday outreach of field-based sales executives. Sales executives travel to a growing number of villages across the Pollachi and Erode regions daily, and their presence inspires more inquiries and interest in Essmart and the company’s products. During these visits, simple trips for errands like product deliveries or a shop visit routinely develop into interactive product demonstrations with end users and onlookers. People who are already at the shop when the sales executive arrives will typically ask questions about the product, thus prompting a demonstration for more understanding. The sales executive then displays and uses the products, informing onlookers of their specifications, advantages, and price, among other information. As the demonstration occurs, more people gather, leading to more questions and interest. Word-of-mouth spreads, which leads to more sales and awareness of Essmart’s products and services. In-person exchanges firmly establish trust, and through relationships that are developed face-to-face, end users experience and express far more confidence in the products Essmart has to offer.
The diversity of shops and village populations has also played a critical role in Essmart’s establishing a versatile and deeply integrated end user clientele. This translates into Essmart selling products to a collection of general stores, department stores (more all-around shops), hardware shops, agricultural supply stores, and small grocers, among others. This wide range of shops and their customers ensures that a significantly denser and more expansive catchment can be achieved. It also speaks to the all-around capabilities of Essmart’s products across trades and consumer needs. When these products are available in an abundant number of shops – particularly those in larger towns – end users trust that they are higher quality and increase trust in the products and Essmart. What is built is accountability across different people with perhaps different needs but certainly similar ambitions for dependable products.

In summary, Essmart’s strategies to firmly establish a distribution network for reliable, life-improving technologies across swathes of end users has very powerfully connected the desires and needs of these consumers with the products they desire and the platform for improving and imagining future products.

ACKNOWLEDGING ESSMART’S CHALLENGES AND LIMITATIONS

As Essmart makes great strides to reach a continually growing and more informed clientele of end users, these researchers cum entrepreneurs acknowledge that the team must internally engage in a critical analysis of their own company. Essmart promotes values and strategies that build trust and understanding throughout the product development and supply chain for social impact technologies. With its positioning as a middleman distributor, it is imperative that the company remains consistent in its approach when engaging with suppliers, shops, and end users. Essmart must continue to assess itself and reflect upon its practices to ensure the effective delivery of services to customers, end users, and social impact beneficiaries.

Essmart’s success depends on its trust-based relationships with shops and end users, as trust is central to both a positive economic system and an interdependent, nurturing feedback loop of information. In order to build this trust, Essmart must ensure that it delivers the highest quality products and provides shops and end users with fair and transparent information about the products in the Essmart catalogue. This is particularly true for rural customers and end users because price does not necessarily equate to the value that they hold for certain products. Rather, value is based on the ability for a product to meet acknowledged needs.

A rural end user’s acknowledgement of needs (for example, for a water filter that cleans waterborne bacteria) is dependent on prior exposure, which is related to income level. This varies across Essmart’s end users. As is such, Essmart must be committed to ensuring that all end users, despite their backgrounds and ability to purchase, receive whatever amount of education is needed such that they are able to see and acknowledge the needs that Essmart’s catalogue of technologies can address. This information must be given for all of Essmart’s products, regardless of the profit margins that Essmart earns on them. It is this commitment to fairness and transparency that Essmart must adhere to as it builds a socially motivated for-profit enterprise. Fortunately, the equitability
in Essmart’s treatment of customers and technologies simultaneously strengthens the company’s most crucial working relationships and, therefore, grows the business.

Another challenge confronting Essmart lies with the suppliers of social impact technologies. The suppliers’ ability to respond to the expectations of end users will serve as a critical benchmark for assessing the company’s impact in the technology-for-development ecosystem. Although Essmart can provide recommendations, there is no guarantee that suppliers are able to or are willing to respond adequately or appropriately to these recommendations. Regardless of the unknown response, a highly active dialogue will need to be present between Essmart and its suppliers. This is another responsibility that the distributor will have to actively undertake and promote on a constant basis, further underscoring the company’s positioning to maintain strong relationships with all parties in the supply chain.

Considering that data collection/management and end user follow-up are rather arduous processes, maintaining thoroughness and quality may be a challenge as Essmart scales. The company is attempting to mitigate such future hurdles by 1) implementing systems that will grow as the company grows and 2) establishing processes that will serve as replicable blueprints as Essmart scales to more regions. For example, the company is already utilizing a mobile phone-based application that allows the company to track shops’ inventory levels and sales in real time, as activity occurs in the field. As Essmart establishes more identical hubs in new regions, starting first in Tamil Nadu, this software and the processes for data collection, end user follow up, and product testing will be replicated at each hub and managed by each hub’s field staff.

The issue of scale brings up another challenge to Essmart’s filling the information gap in the technology-for-development space: connectivity. Connectivity is the broader ability to reach across geographic and socio-economic boundaries, and the quality presents several caveats for the expansion of Essmart’s business and information-bridging activities. For example, a number of geographic constraints that may appear minor or inconsequential in the relatively wealthy state of Tamil Nadu may prove extremely challenging in lower-income states like Bihar or Uttar Pradesh. Some remote villages may not be as geographically reachable by Essmart as others are, and some communities may simply have difficult conditions that prevent households from purchasing products in Essmart’s catalogue. Additionally, for Essmart’s database to be effective for and pertinent to the technology-for-development space, the company needs to collect demographic information across a number of regions and socio-economic end user groups. In some regions of India, maintaining a broad amount of relationships with diverse end user groups may prove difficult. As is such, Essmart must undertake a highly sensitive research approach so that it can access important information about its expanding clientele.
CONCLUSION: THE ESSENTIAL MARKETPLACE FOR BRINGING INNOVATION TO IMPACT

These co-authors and Essmart entrepreneurs wholeheartedly believe that social impact technologies like solar lanterns and water filters have the potential to make tremendous impact within communities at the Bottom of the Pyramid. However, the penultimate challenge presented by the technology-for-development ecosystem to merely innovate these products must be called into serious question. Within the ecosystem, innovation is esteemed as king. Competitions that specifically promote “innovation” as a judging criterion are springing up worldwide and within India, such as the National Innovation Council’s Innovation Challenge. Impact investors especially inquire about a social enterprise’s innovation or “secret sauce,” which is typically expected to be related to patent-based intellectual property.

However, Essmart and everyone tangentially related to technology-for-development or technology-based social entrepreneurship must ask themselves: How can it be ensured, or at least be made highly probable, that innovation results in impact? Within this awards-based social enterprise pipeline that has been created, innovations are identified, rewarded, and promoted when they are at their nascent idea or product development stage. For example, the 2013 Global Social Venture Competition awarded its first place prize to a team that had not yet prototyped its product. The team was not even aware of the on-the-ground hurdles that it would confront when they actually roll out their product, if they even reach that point in the product development pipeline.

When looking at the technology-for-development initiatives that currently exist around the world and within India, it is evident to these authors that social entrepreneurs, funders, and promoters often overemphasize innovation and underemphasize implementation. An engineer-entrepreneur can have one of the most innovative ideas – at least, in the minds of business plan competition judges – but he or she may fail at implementing it in the field, where unforeseen obstacles come to light. Only on-the-ground implementation of a technology for development will determine whether or not the innovation thrives or dies.

The authors believe that struggles encountered by technology-for-development initiatives in their attempts to make large-scale social impact stem primarily from a huge multi-directional information gap. These shortages of knowledge create major impediments for all of the stakeholders in the ecosystem, as accountability and transparency must exist to enable choice and agency among end users. End users must be able to express their opinions about whether a product is good or bad; they must be able to demand better products and services. Suppliers need to have the incentive to respond to end user demands and preferences. Funders need to invest in products that are actually able to sell. Everyone in the supply chain plays a critical role in creating and commercializing desirable, high quality, affordable technologies for development. Each player must utilize his or her voice and become accountable to every other player in the ecosystem.
Essmart’s marketplace for social impact technologies plays an essential role in ensuring that innovation results not just in awards ceremonies and accolades but also (and more importantly so) in tangible positive change. Within the framework of a marketplace, every player has a voice and, as such, is equally amenable for monitoring and assessment at multiple points throughout the social impact technology pipeline and supply chain. This monitoring and assessment is only possible through the collection, analysis, and sharing of market research for social impact technologies, which has before been unavailable because there was no widespread market for these types of technological innovations.

Essmart’s marketplace – essentially, an infrastructure for distribution – exhibits great potential as a platform by which information can be collected and shared throughout the technology-for-development ecosystem. The company creates a highly inclusive and transparent interface that establishes and/or strengthens forward and backward linkages across multiple stakeholders in the technology-for-development ecosystem. Through a comprehensive body of research across all players who are affected by production and consumption flows, Essmart addresses both the distribution and information gaps that so harshly stifle the impact that could be made by the technology-for-development space.

While this case study on Essmart has set out to locate the priorities and challenges for social impact technologies, this research must connect with a larger discussion. If social impact technologies are going to provide more effective connections through their market availability and more equitable opportunities through their usage by vulnerable and underserved end users, then concrete efforts to improve the analytical process about the provision of these products by end users must be undertaken. Through a more accountable approach that reflects and engages with players at all levels of distribution and consumption, social impact technologies will be more able to better serve and empower end users and communities as intended.
REFERENCES


