

*Erik Simanis and Stuart Hart*

# Expanding Possibilities at the Base of the Pyramid

*Innovations Case Discussion: KickStart*

The last decade has witnessed a seismic shift in our understanding of and approach to poverty alleviation. Driven in large part by the emergence of empowerment-based forms of development practice—most notably, Participatory Rural Appraisal<sup>1</sup>—and the success of the Grameen Bank and the microfinance movement it catalyzed, it is now well accepted that sustainable poverty alleviation must recognize the poor as central agents in that process. Indeed, in place of the image of the poor as helpless dependants waiting on Western largesse to extricate them from their predicament, the poor are increasingly recognized as highly resourceful entrepreneurs who possess valuable knowledge, resources and capabilities. In turn, business development and enterprise creation driven by the poor has emerged as a powerful philosophy and tool for addressing poverty and marginality. Significantly, this shift has simultaneously altered the role of the development practitioner—from that of a “development doctor,” who diagnoses the poor’s problem and prescribes the solution, to that of “enterprise facilitator,” who assists the poor in acting on their self-defined aspirations.

KickStart and its founders demonstrate the power of this enterprise-driven approach to poverty alleviation, as their MoneyMaker™ pump has empowered over 30,000 income-poor people to start or expand their own income-generating businesses on their own terms. Much as microfinance loans make possible a wide variety of businesses, so, too, do KickStart technologies. By simply making KickStart technologies accessible to the poor through local market outlets, KickStart provides an enabling tool that expands the poor’s opportunity set and,

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43

*Erik Simanis and Stuart Hart*

consequently, their ability to provide for their own needs. Indeed, MoneyMaker pumps are used in a variety of income-generating activities—from expanding food crop production, to launching plant nursery business, to washing cars and even to providing and selling drinking water. As KickStart founder Martin Fisher observes, the combined impact of these thousands of locally spawned businesses produces country-level effects of significant proportion.

The enterprise-driven success of organizations such as KickStart and Grameen Bank has also contributed to a silent revolution taking place in corporate boardrooms. Stung by the dual recognition that their core market—the highest 20% of income earners on the globe—is saturated and offers limited future growth opportunities and that serving the rich at the exclu-

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sion of the poor will fuel an increasingly global backlash,<sup>2</sup> multinational corporations (MNCs) are turning to the 4 billion poor that comprise the “Base of the Pyramid” (BoP) as a viable market.<sup>3</sup> By learning to create business models and offerings that serve the needs of those at the BoP, the MNC opens up a market of massive growth potential while demonstrating a commitment to serving a diversity of needs and values.

But the massive opportunity for corporations presented by the BoP is matched by an equally daunting set of challenges. First, the cost structure and material intensity of MNCs’ current business models preclude their easy extension to BoP markets. For though MNCs’ customers account for little more than 20% of the world’s population, these customers account for almost 80% of the resources consumed on the planet. In addition, relative to wealthy consumer markets, BoP markets are characterized by a completely different set of geographic (e.g., predominantly rural based), structural (e.g., absence of roads, telecommunications network), institutional (e.g., absence of Western property rights regimes) and cultural (e.g., different life aspirations) factors. Clearly, serving BoP markets sustainably requires a radical change in how corporations think of and do business.

It is with this in mind that we turn to consider the successes, as well as the untapped opportunities, that KickStart’s experience provides. For it is from pioneering organizations such as KickStart that corporations can gain valuable insight into alternative business approaches and models for sustainably serving BoP markets.

#### WHAT IS “APPROPRIATE TECHNOLOGY”?

How has KickStart succeeded in designing and disseminating a technology (the MoneyMaker pump) that has manifested such a tremendous impact on the lives of Kenya’s rural poor? What can corporations looking to serve the BoP learn from KickStart’s experience? At first blush, and based on the information in the case, it would seem that the foundation for KickStart’s success is rather straightforward: The organization has created “truly appropriate” technologies and marketing strategies based on the needs of the rural poor. In other words, the configuration of their products and the way those products are advertised and disseminated are better suited to

*Expanding the Possibilities at the Base of the Pyramid*

the unique needs of the rural poor, their socio-cultural structure, and their environmental conditions than other technology-based development offerings. Let's explore this assumption.

The KickStart case argues that income-generating technologies for the rural poor need to be simple to use and easy to repair, labor and time intensive in their use, priced sufficiently low to allow individual ownership, have low energy (non-human) requirements, and be environmentally sustainable. Ostensibly, such technologies do not exist and require Western engineering capability to produce. An appropriate marketing strategy would focus on the individual buyer and not impose any "arbitrary" ownership forms (e.g., women's groups, collectives). In theory, it is this unique combination of design and marketing characteristics that convert otherwise inappropriate technologies and development strategies into potent, poverty-alleviating mechanisms. Yet, as appealing as the simplicity of this answer might be—for, if correct, global poverty alleviation would entail the application of a fairly straightforward set of principles—the evidence just isn't there to support it.

First, we can point to a number of successful examples of technology-driven micro-enterprise creation among the rural poor that utilize technology designs and/or marketing approaches that diverge from those of KickStart. Let's look in more detail at the cases of GrameenPhone and n-Logue, as they stand in stark contrast to KickStart's experiences with its MoneyMaker pump.

GrameenPhone, launched in 1997 in Bangladesh, outfits women entrepreneurs or "phone ladies" in rural villages with an off-the-shelf mobile phone and a solar recharger unit, the cost of which (approximately \$175) is financed through microloans from Grameen Bank. The phone ladies retail the phone service to people in the villages where they live. The performance of Grameen Phone has been nothing but astounding. By August 2004, there were some 75,000 phone ladies with each operator generating additional income of approximately \$1000 per year. Recall that the per capita income in Bangladesh is \$286 per year.<sup>4</sup> Through the phone ladies, half of Bangladesh's rural population now enjoys access to telephony. And Grameen Phone's revenues are estimated at half a billion dollars.

The India-based company n-Logue, also a privately-owned rural telecommunications company, piloted a locally engineered wireless-in-loop (WLL) voice- and data-splitting technology in India in 2001 called corDECT. The company relies on a micro-franchise model to equip rural entrepreneurs with a computer, monitor, printer, digital camera, back-up battery and application suite, all in local language. A corDECT wall set connects the franchisee to a central node that provides access to India's internet backbone and national telecommunications network. In addition, the kiosk franchise owners receive six months of unlimited inter-

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*Erik Simanis and Stuart Hart*

net access, a marketing kit and introductory training. The cost of the package is approximately \$1,200. Franchisees generate income by selling a variety of internet-based services,<sup>5</sup> telephony, computer training, digital photographs and video showings. By 2004, n-Logue was operating in seven states and 1,900 villages, and expecting to enter an additional 4,000 villages in 2005.

How do GrameenPhone's and n-Logue's technologies stack up against the criteria outlined in the KickStart case? First, it's worth stating explicitly that, in both cases, all or part of the core technology offering is an existing, off-the-shelf technology (e.g., cell phone, computer) previously utilized only by the wealthiest of people. It was not necessary to redesign either the cell phone or the computer to make them appropriate for the rural poor. Although n-Logue's extension of internet connectivity to rural areas indeed required the development of a "rural-

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ly-specific" technology, the technology is clearly not mechanically simple—nor one easily repairable by anyone other than a highly trained engineer. The same would go for the cell phone and computer. And although technophiles would argue that the cell phone and computer are easy to use relative to a MoneyMaker treadle pump, they certainly require training..

Contrary to KickStart's design assumptions, one of the greatest sources of value

delivered by the cell phone and internet access to the rural poor is time based. Through cell phones and internet, poor rural farmers are able to get timely, up-to-date information on everything from crop prices to crop insect pests and even livestock illness, thereby allowing farmers to command higher prices for their crops and tend to crop disease or livestock illness before incurring heavy economic losses. In addition, phone and internet access save rural farmers the time (and expense) of journeying into town. Two days spent in transit are two days away from the farm, thereby jeopardizing crop yield and income. Impact assessments of Grameen Phone's pilot study indicated that each call placed in the rural village saved the user \$2.70 to \$10, which translates into 2.5% to 10% of monthly household income.<sup>6</sup> Indeed, the rural poor experience opportunity costs as much as or even more intensely than wealthy people.

Energy-wise, both the cell phone and the n-Logue computer system are dependent upon electricity. Cognizant of the unreliability (and even outright absence) of rural electrical grids, each of the businesses addresses this gap by simply providing a mobile energy source as part of the technology package. And in Grameen Phone's case, the energy source relies on solar power.

From a pricing standpoint, it's not clear if the \$175 cost of the cell phone kit is a priori "affordable," given that the annual per capita income in Bangladesh is \$286. Relative to the MoneyMaker pump, which retails at \$88 (by virtue of grant subsidies) in Kenya—a country whose per capita annual income is comparable to that of Bangladesh—the cost of the phone kit is seemingly pushing the threshold of affordability. At \$1,200, n-Logue's computer franchise package for India's rural poor appears absurd. However, ex post, the cost of the technol-

### *Expanding the Possibilities at the Base of the Pyramid*

ogy packages is clearly affordable, as the revenues generated by the micro-businesses are sufficient to pay for the financing cost of the technology while leaving profit. The important point is that “affordability” is not inherent to a technology—affordability is a function of the business model within which the technology is embedded.

Let’s briefly turn our attention to the issue of marketing and dissemination strategy, particularly in the case of Grameen Phone. As stated in the case, KickStart argues strongly against “arbitrary” segmentation perpetuated by development professionals (e.g., women) and “Marxist-based” models of collective ownership. Such approaches not only fail to reach the right customers, they also create mis-aligned incentives, inevitably leading to what economists call moral hazard. Yet Grameen Phone and Grameen Bank, as many are aware, target women for its customers. They do so in the belief—supported by empirical studies—that women, more so than men, invest additional income in their children’s health and education.

In addition, Grameen Bank, which finances the phone purchases, utilizes a solidarity lending model in which a group of women collectively become the guarantors of unsecured loans issued to individual women in the group. Conventional economic wisdom suggests that such a loan scheme—which removes a large part of the risk associated with an individual’s loan—would be ripe for abuse. However, Grameen Bank’s loan repayment rate stands above 95%, a rate far better than that of traditional banks. The success of the solidarity lending model—and Grameen Bank’s and GrameenPhone’s business model—is dependent upon the communal ties that exist among women in rural Bangladeshi communities. Indeed, the assumption of individual self-interest and rent-seeking that underlies traditional banking approaches raises significantly the cost of doing business (as they require intensive background screening, paper work, demonstration of collateral, and credible threat of legal recourse) and, thereby, raises the price of loans beyond the reach of the poor.

As we’ve seen, if we were to extract a set of “appropriate” technology design and marketing approaches from the success cases of Grameen Phone and n-Logue, our list would be practically the reverse of KickStart’s. But there is yet another reason to doubt that any such criteria form the foundation for KickStart’s success—for there are examples of failed micro-enterprise development interventions that compare favorably with KickStart’s criteria.

The animal-drawn wheeled toolcarrier—the subject of Paul Starkey’s 1988 study<sup>7</sup>—was designed as a multipurpose farming tool to boost farming productivity, primarily in Asia and Africa. The toolcarriers could be used for everything from plowing, seeding, weeding and transport. As Chambers recounts, the toolcarriers “were designed by agricultural engineers, developed and tested in workshops and on research stations, and then passed on to farmers for trials and to manufacturers for production.”<sup>8</sup> The resources and brainpower that went into some three decades of research and development on the toolcarriers are astounding. Starkey estimates that the development costs (in 1987 prices) were over \$40 million, involving hundreds of senior and junior staff at multilateral institutions such as the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT).<sup>9</sup>

By most estimates (prior to Starkey’s 1988 publication), the animal-drawn wheeled toolcarrier was an “appropriate” technology that blended Western design capability with local environmental conditions. At the time, it compared favorably with KickStart’s current criteria. Critically, the toolcarrier’s central purpose was to boost farming productivity and efficiency and, hence, generate additional income. Economic forecasts from a research station in Senegal



*Erik Simanis and Stuart Hart*

suggested that the wheeled toolcarriers would “allow cultivated surfaces to double...while at the same time allowing returns to both area and labour to increase.”<sup>10</sup> An ICRISAT analysis claimed that the additional incremental profits generated by the toolcarriers would pay for the \$1,000-plus costs of the equipment within a year’s time. Given the success of n-Logue’s \$1,200 computer franchise package, these forecasts certainly sound plausible.

The design relied on Western engineering capability and research, much of which took place on agricultural research stations dotted across the developing world. Even the design principles articulated by Jean Nolle, a French agricultural engineer and pioneer in the development of toolcarriers for the better part of three decades, included simplicity of design, multi-purpose use, and standardization of components.<sup>11</sup> Ruggedness and simplicity of use and ease of manufacture and repair were central concerns. As well, the toolcarriers did not require electricity or fossil fuels, simply animal power.

Much like KickStart, many dissemination strategies, particular during the 1960s and 1970s, relied on private-sector manufacturing and distribution. Private sector-led initiatives could be found in India, Botswana, Brazil, Mexico, Senegal and Cameroon. During the 1980s, a shift toward government and aid-sector distribution of agricultural implements shifted trading patterns, with manufacturers of toolcarriers moving out of direct sales to focus on governmental and aid agency contracts.

In the end, however, the wheeled toolcarriers were flatly rejected by farmers, who argued that single-purpose implements better suited their needs and that the toolcarrier’s cost was too high. Once again, *ex post*, one can easily identify a host of design flaws that might explain its failure. But the point remains that had KickStart’s criteria been in place three decades ago, the same outcome would have resulted: The toolcarrier would have been deemed appropriate and launched into the market with expectations of success.

Yet, if this example isn’t sufficiently convincing—as we recognize that our and Starkey’s readings of this technology and its history are but one of many—there is another organization whose technologies adhere letter for letter to KickStart’s design and marketing principles but that have failed to catalyze significant rural micro-enterprise development: KickStart itself. For it is important to remember that no other KickStart technology—which among others include an oilseed press, a soil block press, a hay baler, and a pit latrine slab—has had an effect remotely comparable to the MoneyMaker pump on rural micro-enterprise development and, consequently, on rural poverty reduction. As its 2003-2004 annual report indicates, over 98% of the organization’s unit sales (9,007 out of a total 9,189 units sold) are generated by a single product type: the micro-irrigation technologies. And the MoneyMaker line of pumps was not KickStart’s first product released into the market—so success doesn’t stem from longer market exposure. There simply is no easy way to explain the disparity in impact among KickStart’s own technologies.

What this brief analysis reveals is that KickStart’s success has little to do with having hit upon some sacred, infallible set of design and marketing criteria that are inherently “appropriate” for the rural poor—otherwise, the pump’s success would extend over to KickStart’s entire suite of technologies. Indeed, the very use of the moniker “appropriate technology” often relies on a tautological logic: If a successful business incorporates a technology, the technology (and its dissemination strategy) is deemed appropriate; if no profitable business model can leverage the technology, it is relegated to the status of “inappropriate.” Yes, all of the factors and crite-

### *Expanding the Possibilities at the Base of the Pyramid*

ria identified in the KickStart case inform a business model and how the end-user (the rural poor in this case) implements a technology, but they do not a priori determine business success or failure. They merely establish the context within which the entrepreneur innovates. Appropriateness, therefore, is not determined by the technology or the marketing approach but by the imagination of its user.

#### REAL OPTIONS FOR REACHING THE “BASE OF THE PYRAMID”

Back to our original question: Why has KickStart been successful, and how can companies learn from their experience? Clearly, KickStart is accomplishing something that few other organizations—for profit or otherwise—can claim. Boosting a country’s GDP by 0.5% while serving its poorest sectors is no small feat! But if the success of the MoneyMaker pump (and all other technologies) in catalyzing micro-enterprise has little to do with ingenious product design or marketing (or prescient knowledge of profitable business opportunities for that matter), where then do we turn?

Before we address this question, let’s remind ourselves how difficult it is to build a new business, whether you are a multinational corporation entering a new-product market or a micro-entrepreneur in Kenya. The failure rate of startup businesses in the U.S. has been estimated to reach 85% in certain sectors, despite the resources people have available to them relative to the rural poor. “Good ideas” are a dime a dozen—turning an idea into a profitable business is where the rubber meets the road. Within such a context, the linear and highly regimented planning (and design) models that constitute the heart of much managerial and administrative training—both of business and development professionals—are likely to fail. It takes a different kind of organizational strategy, one that accepts and integrates ambiguity and uncertainty, not masks it behind a façade of numeric certainty. KickStart’s success, we believe, is the result of such an organizational strategy, one which we shall call a “real options” strategy.<sup>12</sup>

A strategy is distinct from a “business model.” KickStart’s business model consists of the organization’s particular configuration of resources and assets by which it manufactures, markets, finances, and distributes its pumps and other technologies. A strategy, by contrast, outlines how a firm intends to achieve its stated mission over time. Key strategic processes include defining the scope of the organization’s activities, the allocation and targeting of funds, and the choices one makes regarding organizational size and structure.

The notion of a real-options strategy takes its name and underlying logic from the “financial option.” A financial option explicitly recognizes the value of uncertainty (volatility) and time and the relationship between the two. Its appeal as a logic for guiding organizational strategy stems directly from its ability to value uncertainty. As we’ve argued above, new enterprise creation is a prime candidate for such an approach, particularly at the BoP. Fundamentally, a real-options strategy responds to uncertainty through a staged process of rapid, low-cost continuous learning supported by a flexible resource allocation and organizational structure. Small-scale experimentation and low-cost “probes” are the tools that enable such learning. Within a real-options logic, organizational flexibility is of central concern. As such, investments are targeted into establishing a core-capabilities platform from which the organization can respond in multiple directions based on new information. By extension, in

*Erik Simanis and Stuart Hart*

place of a single-product approach, which can lead to over-commitment, a portfolio of products and technologies would be developed and tested, thereby spreading risk while increasing the number of “probes” in the market. Within a real-options framework, product or business failures are not considered wasted efforts, but valuable sources of information.

Organizational growth and expansion—in people and infrastructure—would be limited until the experiments and small-scale pilots yield sufficient insight into the business model to

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## KickStart’s strategy for alleviating poverty through technology-based micro-enterprise formation provides an excellent example of this real-options strategic framework.

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justify scaling up or discontinuing. As the wheeled toolcarrier example demonstrates, having the organizational flexibility to terminate a low-value project is as valuable as the opportunity to scale-up one that shows promise. And the scale-up process itself follows an incremental approach, avoiding the all-or-nothing investment decisions which lock the organization into a single business model from the start.

KickStart’s strategy for alleviating poverty through technology-based micro-enterprise formation provides an excellent example of this real-options strategic framework. The trial-and-error approach that the case alludes to conceals a deeper strategy that leverages the

KickStart’s core competency in producing durable, culturally-sensitive, mechanically operated technologies within a highly flexible organizational design that facilitates rapid, low-cost learning. A visit to KickStart’s corporate headquarters in Nairobi quickly supports the notion that the organization’s resources are focused on harnessing and expanding its technology-development capability. Most of the organization’s formally trained personnel work in its Tech-Dev department (as do its ex-patriots), and a significant portion of its office space goes toward this function. And “cultural capital” clearly resides within Tech-Dev, as decision-making power flows from Tech-Dev to the field.

KickStart also maintains organizational flexibility and low experimentation costs by driving most of its operations through a variable-cost model. Manufacturing is outsourced. Products are sold through independent dealers. The Marketing/Sales group relies heavily on commission-based employees. The Impact Monitoring department is a recent phenomenon that has developed as demand for the pumps has increased, along with donor requests to learn the impact of their funds.

Unlike many NGOs, KickStart does not invest significant funds, research or activism into development issues. As the case suggests, KickStart does not believe in extensive training or skills development (other than operation of its equipment), does not focus on establishing “women’s self help groups,” nor address itself to a host of other potential domains (e.g., nutrition, health). KickStart believes in these important issues, but does not feel it possesses the capacity to address them effectively. In addition, the group’s philosophy focuses on the individual as the locus of change. Again, the critical implication is that KickStart maintains very low overhead, giving it the organizational flexibility to experiment and learn.



### *Expanding the Possibilities at the Base of the Pyramid*

KickStart maintains a portfolio of products that include an oilseed press, the soil block press, the treadle pump, and the hay baler, among others. The organization continues to develop additional technologies, many of which leverage a common compression technology. The products share a suite of common characteristics: all are manually operated and require, at most, two people to function; they are ergonomically designed and easy to operate; and durability and ease of repair are made possible by designs that require few moving parts. By maintaining a portfolio of technologies, KickStart gains greater market knowledge through its multiple touch points with the market and increases the likelihood that a successful match will occur. It's instructive to recall that KickStart's first technology was not the micro-irrigation pump, but the oilseed press (which only sold 49 units in Kenya in 2004 compared with 9,007 micro-irrigation pumps). Had KickStart bet the farm on its oilseed press—much as the developers of the wheeled toolcarrier—KickStart would not be in the position it is today.

The value of a real options strategy for serving BoP markets is that it increases the probability that an organization will develop a product or service that a poor person or community will successfully embed into a profitable, wealth-generating local business. And as KickStart and other pioneering social entrepreneurs have demonstrated, demand for their products and services is ultimately dependent on the ability of the end-user—the owner of the MoneyMaker pump or the cell phone—to fashion a wealth-creating micro-enterprise. But, as we've suggested, catalyzing these micro-enterprises is not something amenable to deliberate, deductive planning, nor a natural outcome from a technology's design characteristics, nor based on how we may market them. Yes, these factors comprise the boundary conditions within which business models are developed, but they do not determine them. As such, there is no silver bullet technology for dealing with the uncertainty of new enterprise creation. But there are strategies that can help organizations manage such conditions. KickStart's real-options strategy is one such model.

*We invite reader comments. Please send an email to <editors@innovationsjournal.net>.*

1. Robert Chambers, *Whose Reality Counts: Putting the First Last*, (London: ITDG Publishing: 1997).
2. As demonstrated by the intensification of anti-WTO, WEF, and IMF protests, from Seattle, Davos, Prague, and Cancun to, most recently, Hong Kong. Furthermore, today's demonstrators are as likely to include smallholder farmers and Third World women's coalitions as they are American college students and European "Greens."
3. C. K. Prahalad and Stuart Hart (2002), "The fortune at the bottom of the pyramid," *Strategy+Business* 26: 54-67; C. K. Prahalad, *The Fortune at the Bottom of the Pyramid* (Philadelphia: Wharton School Publishing, 2004); Stuart Hart, *Capitalism at the Crossroads* (Philadelphia: Wharton School Publishing, 2005).
4. Hart, *Capitalism at the Crossroads*.
5. n-Logue facilitates the provision of various internet-based services, including education and training, telemedicine and health care, and agricultural and veterinary services.
6. Hart, *Capitalism at the Crossroads*.
7. Starkey, *Animal-Drawn Wheeled Toolcarriers: Perfected yet Rejected* (Braunschweig, Germany: Friedr. Vieweg & Sohn, 1988).
8. Chambers, *Whose Reality Counts*, p. 12.
9. Ibid.
10. Starkey, *Animal-Drawn Wheeled Toolcarriers*, p. 122.
11. Ibid, p. 16.
12. See Hart, *Capitalism at the Crossroads*, pp. 196-198.