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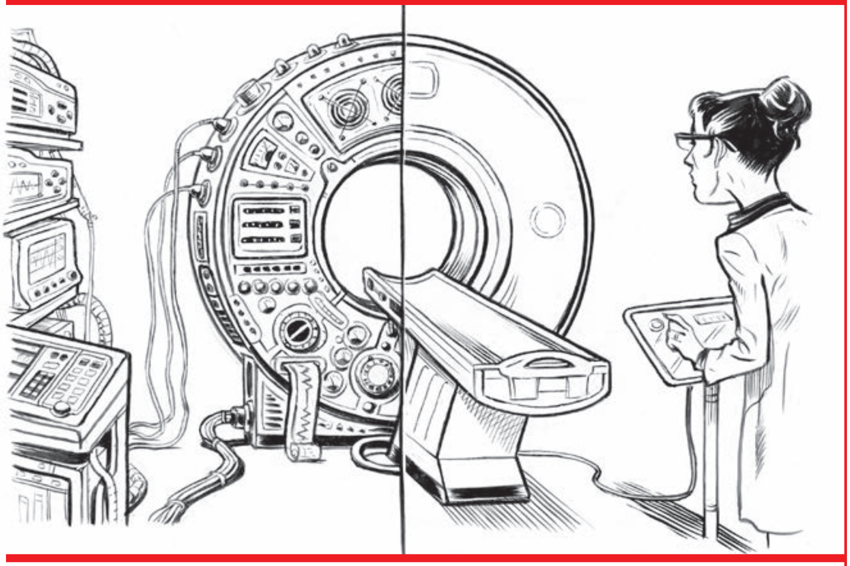

Illustration by Lars Leetaru

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by Navi Radjou and Jaideep Prabhu

In China, the Siemens R&D team has designed a high-end computed tomography (CT scanning) device that's simple enough for health professionals who are not doctors to use. To develop this, the company pioneered a type of innovation it called "industrial design thinking": The innovators convened workshops with users of its devices and used craft supplies such as colored paper to build models in order to get a clearer idea of what people wanted.

For example, conventional CT scan devices in Western hospitals are used for a wide variety of purposes, including the detection of rare diseases. The settings and controls are so complicated that operators must be trained at length to use them. But the Chinese users were much more interested in a few basics, such as diagnosing sports-related injuries and other common ailments. As these operators talked about their needs, making models of what would work for them, the possibilities became clear. The result was a Siemens scanner built for speed and simplicity. It consumes less energy but processes images faster than a conventional scanner. It cuts the cost of treatment by 30 percent and reduces radiation by as much as 60 percent. And it is remarkably easy to use.

Another medical device that benefitted from Siemens industrial design thinking workshops is a urinalysis machine originally developed through conventional processes. When it was launched, the device quickly gained an 80 percent market share worldwide, but only a 2 percent share in China. It was then put through a workshop, which uncovered that the Chinese healthcare market craved a much simpler, less expensive piece of equipment. In response, Siemens created a microscope with automatic image processing that could identify solids in the sample. Its technology makes the frugal machine more accurate than chemical analysis done manually.

These frugal medical devices have become popular in China, but they are also selling surprisingly well in Western markets. It turns out that people in those markets, too, value simple devices that do sophisticated things. Delivering frugal products in mature markets has become a growth industry for Siemens, as well as for other companies in a variety of industries, including automobiles, consumer products, education, home furnishings, and even luxury goods.

Frugal innovation is associated with resource-constrained and low-income emerging economies such as those of Africa, India, and China, but we have recently seen the rise of frugal innovation efforts in developed nations including the U.S. and in Europe. These are not primarily cost-cutting measures, a response to financial constraint or a tepid economy. Rather, across the developed world, companies are beginning to use frugal innovation as a growth strategy. They are introducing a larger lineup of new products and services, often with greater economic and social value, at a much lower cost and using fewer natural and financial resources. Their goal is not to create cheap offerings. They want to create more effective offerings that draw people in with their simplicity, while also cutting down on the use of various resources.

It turns out that the four key attributes of frugal innovation — affordability, simplicity, quality, and sustainability — are exactly the qualities that customers in mature markets want most. This makes frugal innovation a viable growth strategy for companies expanding in those markets, not just in emerging economies.

The Link to Responsibility

Low prices and value, of course, have always been important drivers of growth, but they are generally insufficient in and of themselves: Something else needs to attract new customers and make it worth their while to switch or experiment. Increasingly, that second factor for consumers in relatively mature markets is environmental and social responsibility, embedded into the products and the processes by which they are made. These consumers — especially those in gen Y — are increasingly both value-conscious and *values*-conscious. For instance, according to one Nielsen study from 2014, more than 40 percent of U.S. and European consumers today say they are willing to pay extra for products and services from companies that are socially and environmentally responsible. Moreover, reducing environmental impact is inherently frugal and innovative: It means developing designs and practices that cut waste, use less energy, and make better use of materials, including those in recycling bins.

Technology and values combine to make many of these innovations feasible. Many of the early adopters are found in grassroots communities of "prosumers," tech-empowered consumers who use maker tools such as 3D printers and peer-to-peer sharing platforms including Airbnb and BlaBlaCar to create their own products or share their apartments and cars with other people. Other early adopters are companies in service sectors such as retail, healthcare, education, banking, and insurance. For example, Leroy Merlin, one of Europe's top home improvement retailers, teamed up with the do-it-yourself platform provider TechShop to upgrade some of its retail stores into "maker spaces" equipped with industrial tools and 3D printers that cater to digitally savvy prosumers. Thus, if your washing machine breaks down, rather than ditching it and buying a new one, you can bring the defective component to a Leroy Merlin store in your city, 3D-print a replacement part, and take it home to fit into your machine. This innovation allows Leroy Merlin to expand its service dramatically without adding inventory, creating a new high-growth business that didn't exist before and building loyalty with customers who are now aware that this retailer is innovating on their behalf.

> **The attributes of frugal innovation — affordability, simplicity, quality, and sustainability — are what customers in mature markets want.**

Building a Frugal Capability

The growth opportunities in frugal innovation are clear; however, its disruptive nature means that companies need to be strategic about how they adopt and implement it within their organizations. We suggest three entry points for companies seeking to embark on a frugal innovation journey. The higher the level, the greater the risk and complexity, but also the more enduring benefits conferred on companies adopting it.

Level 1: Frugal products and services. This is a good starting point and creates a tactical competitive advantage for companies facing stiff price competition from low-cost rivals. Think of fast-moving consumer goods companies trying to win back thrifty consumers who have been switching to private-label products; brick-and-mortar hotel chains having to fend off Airbnb; or multinationals desperate to crack emerging markets such as India and China where frugal local companies reign supreme. Level 1 is also suited to companies with a high environmental impact, such as those in the automotive, chemicals, and electric power industries. These businesses may be under pressure from regulators and eco-conscious consumers to redesign existing products and services, or to create new ones that are environmentally friendly. Frugal innovation can help.

Companies with a conservative culture, where innovators are treated with skepticism, should generally start at level 1. This stage often involves prototyping one-off pilot projects to test specific ideas. With a well-designed prototype, and a great deal of rapid innovation (often abetted by digital fabrication), companies can quickly develop and launch a new frugal product or service, win over the skeptics, and thereby build momentum to launch more frugal solutions down the road.

French carmaker Renault has followed this strategy with its low-cost Dacia auto line. Since launching the Logan — a US$6,000 sedan — in 2004, Renault has gradually expanded its product line of entry-level vehicles to include an affordable van, pickup, and SUV — all sold under the Dacia brand. Renault has set up a sizable sales and marketing group devoted to Dacia. Shunning the low-cost label, this team shrewdly promotes Renault's entry-level products as stylish, comfortable, dependable, and "outrageously affordable."

Renault will be rolling out another frugal car in India in late 2015. It's called Kwid, and it has been developed from scratch using exclusively local design, R&D, and manufacturing talent. Boasting a sporty look, the Kwid incorporates many innovative components, such as a robust chassis and a fuel-efficient engine, to meet the demanding transportation needs of developing nations. It is also exceptionally roomy: CNN-IBN described it as a "compact car aping…an SUV." Priced below $5,000, Kwid will be sold first in India to aspiring middle-class consumers seeking a car that combines affordability, elegance, and reliability. It's a prototype in the sense that Renault is testing the larger opportunities for this type of vehicle worldwide. It could easily be adapted to China, Russia, Africa, Brazil, Eastern Europe, and Southeast Asia. And although the company has no explicit plans to bring the car to more mature economies in Europe, it refers to the Kwid as a "global platform for a global car."

Companies that succeed at level 1 achieve only a tactical advantage because their frugal products and services can potentially be copied — and exceeded in value and performance — by rivals. To stay ahead of competition and gain a sustainable advantage, companies need to move to level 2.

A company can achieve competitive advantage only by embedding frugality into the corporate culture.

Level 2: Frugal business models. Companies that sell commodity products in mature or saturated markets, and firms whose supply chains depend on increasingly costly or scarce natural resources (such as water, wood, and oil), face huge pressures to do more with less. To stay competitive, these companies need to advance from seeking tactical advantage to enabling strategic change. They must reinvent their operations and practices systematically, using both cost savings and a reduced energy and environmental footprint to distinguish themselves as companies that avoid waste. This involves going beyond lean manufacturing and process reengineering, to a full redesign of the company's value chain, encompassing sourcing, R&D, production, distribution, and product and customer service.

To make this work, leaders must secure the buy-in and commitment of all these functions — and value chain partners — and embed frugality in all their activities. This may involve setting up a frugal innovation lab to regularly test new practices and processes, dedicating a section of R&D to frugal efforts, or extensively partnering with external innovators to accelerate and scale up internal initiatives.

Unilever began to do all these things in 2010, using its dedication to environmental quality as a starting point. CEO Paul Polman made a public commitment to double the company's revenues to €80 billion (US$90.1 billion) by 2020 while halving its environmental footprint. Since then, every functional and regional unit of Unilever has been involved in actively implementing the frugal business model. The R&D function, for instance, is developing resource-efficient products such as soaps that kill germs more quickly using less water. Supply chain teams are reducing waste and boosting energy efficiency in the firm's global value chain, which comprises 260 factories and 460 warehouses across 90 countries. And Unilever's purchasing and sales groups are engaging with thousands of suppliers and distributors worldwide to source and distribute frugal products to 4 billion consumers by 2020 in a socially inclusive and ecologically responsible way.

At level 2, a company that has successfully implemented a frugal business model can better defend its competitive position. It is hard for any rival company to comprehend — let alone reverse-engineer and imitate — the ingrained systemic changes and habits that now suffuse the company's organization and value chain.

Indeed, the biggest obstacle to a successful implementation of level 2 is typically the company itself. If a drastic change occurs in the external environment or internal conditions (such as the CEO's departure), the organization's atavistic instincts may gain the upper hand and the company may revert to its un-frugal habits. A company can achieve an enduring competitive advantage in the resource-constrained 21st century only by embedding frugality into the corporate culture. To do so, senior leaders must move to level 3.

Level 3: Frugal mental models. Like Unilever, the Tarkett Group has reinvented itself to meet the demands of its evolving environmental strategy. But this global flooring and sports surface solutions provider, headquartered in Paris, has adopted "circular economy" principles. In this type of industrial design, waste is eliminated. Biological elements are put back into the ecosystem in a sustainable way, while all other materials are designed to be reused, recycled into new products, or used as input into some other industrial process.

Operating this way takes a kind of openness to the outside world that is rare among business leaders. Tarkett is working with other companies to develop eco-friendly products made using only rapidly renewable raw materials such as pine resin, walnut shells, jute, and linseed oil, as well as recycled plastic. It is also working with retailers such as Walmart, which collects recycled carpet in many of its stores. By reinventing its entire value chain to make it sustainable, Tarkett intends to eliminate industrial waste entering the landfill by 2020; currently, it maintains seven recycling centers that have captured (as of the end of 2014) about 13,500 tons of discarded flooring and other waste from its own products as well as products of other manufacturers.

Michel Giannuzzi, CEO of Tarkett, is not the only leader striving to inculcate a frugal mind-set at all levels of an enterprise. At health insurer Aetna, CEO Mark Bertolini is promoting value-based care, a frugal strategy for delivering better care at lower cost for more U.S. residents — which will require major shifts in the 162-year-old company's corporate culture. (See "Mark Bertolini's Preventive Disruption," by Jon Katzenbach, Gretchen Anderson, and Art Kleiner, *s+b*, Apr. 13, 2015; and "Aetna's Frugal Healthcare Strategy," by Navi Radjou and Jaideep Prabhu, *s+b*, Sept. 15, 2015.) Similarly, John Fallon, CEO of leading education company Pearson, has proposed a shift in the mental model of all his employees from selling books to selling digital education services. These software-based offerings are more affordable than traditional textbooks and can be more effective in promoting learning, because students can personalize the information they access according to their needs.

Making this kind of radical change and striving to cultivate a frugal mind-set won't be easy for conservative organizations that have operated for decades under the assumption that bigger is better. It will require unlearning old thinking patterns and habitually doing more with less.

Deciding Where to Start

It may seem as if many of the basic tenets of frugal innovation are simply those of good management. Indeed, we posit that frugal innovation is part of good management. Yet companies across industries and regions do not uniformly practice its tenets. In particular, we find that firms in developed nations lag well behind their peers in emerging markets in the frugal innovation journey. We estimate that only 5 percent of companies in developed economies (the U.S., Europe, and Japan) have advanced to level 3. An additional 15 percent operate at level 2 or 1, having incorporated frugality into only some parts of their organization. The remaining 80 percent have yet to articulate a coherent and wide-ranging frugal innovation strategy.

These firms in particular should consider kick-starting their frugal innovation engines without delay, for three reasons. First, as government and household budgets continue to face downward pressure in the developed world, frugal products and services are quickly moving from niche markets into the mainstream. Second, regulators in the U.S., Europe, and Japan are increasingly driving companies to develop products and services that are more affordable, accessible, and environmentally friendly. And third, a range of frugal and agile competitors are beginning to take big chunks of market share away from incumbents in the West, across several sectors. Such frugal rivals include emerging market companies breaking into the rest of the world, well-known digital disrupters (Apple, Google, Amazon, Airbnb, and many others), and large interlopers from mature sectors (such as Walmart, which is expanding into financial services and healthcare).

It's important to note that frugal innovation isn't a panacea for all businesses. Nor may it be a strategic imperative for all companies. For instance, companies selling premium products such as luxury goods and vendors of high-end technologies are not typically pressured by their brand- and quality-conscious clients to develop frugal products. And yet, even these premium product suppliers can adopt frugal business practices internally to develop new products faster and better and to become more efficient and agile in responding to customer needs. Luxury conglomerates Kering and LVMH, for example, are both instituting circular economy principles in order to reduce their carbon footprint and boost resource efficiency in their global supply chain.

Each of the three entry points in our framework offers a way for companies to get started on the frugal innovation journey. To decide which level is best for their company, leaders need to consider the degree of urgency in their industry along with their own leadership style and the existing corporate culture. However, in the long run, we believe that almost all companies will eventually need to get to level 3 to gain a sustainable advantage. ✚

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