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FRUGAL INNOVATION

How to do more with less

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Contents

Case studies

Preface

FRUGAL INNOVATION is the ability to "do more with less" – that is, to create significantly more business and social value while minimising the use of diminishing resources such as energy, capital and time. In this "age of scarcity", Western companies are facing growing pressure from cost-conscious and eco-aware customers, employees and governments, who are demanding affordable, sustainable and high-quality products. Frugal innovation is therefore a game-changing business strategy. But it is more than a strategy: it denotes a new frame of mind, one that sees resource constraints as an opportunity, not a liability.

In April 2012, after four years of research, our book *Jugaad Innovation* was published. It led readers into backroom innovation labs in developing countries such as India, China, Brazil and Kenya to examine the roots of this frugal mindset. (*Jugaad* is a Hindi word meaning an innovative fix or an improvised solution born from ingenuity and cleverness.) It showed how inventive entrepreneurs and firms in resource-constrained emerging markets concoct frugal solutions such as a fridge that consumes no electricity, a bicycle that converts road bumps into acceleration energy to run faster, or a mobile-based service that allows users to send and receive money without having a bank account.

Since the publication of *Jugaad Innovation*, there has been an explosion of interest in frugal innovation for *developed* economies. Corporate leaders and policymakers in the US, Europe and Japan are eager to understand how to do more with less. This has led them to fundamentally rethink how they operate, build and deliver products and services, interact with customers and citizens, and create greater value for themselves and society while preserving the environment.

This book identifies the best practices drawn from our studies of frugal pioneers in the US, Europe and Japan across sectors including manufacturing, retail, financial services, health care and education. It takes readers deep inside developed-world businesses and industries that are already reaping the benefits of frugal innovation. Pioneering companies such as Aetna, Fujitsu, General Electric (GE), GlaxoSmithKline (GSK), Pearson, PepsiCo, Renault-Nissan, Siemens and Unilever are striving to embed frugal processes and, most importantly, a frugal mindset in their organisations.

To achieve dramatic gains in cost efficiency, speed and agility, companies need to rebuild their innovation engines. This will present different challenges for different industries and functions, but six general principles are relevant to all industries and companies. Chapter 1 provides an overview of the socio-economic factors in developed nations that have given rise to frugal innovation, and how and why Western consumers have embraced frugal thinking. Chapters 2–7 look at the six frugal principles, and how companies have adopted and profited from them:

- **Engage and iterate.** Chapter 2 lays out the first principle of frugal innovation: engage and iterate (E&I). Rather than using insular research and development (R&D) departments that rely on educated guesses about customer needs, E&I starts with customers, observing their behaviour in their natural environment, and then considers how products can be made as relevant as possible, going back and forth between the customer and the lab to refine designs. Using case studies of frugal pioneers such as Arla Foods, Fujitsu, GE, GSK, Intuit and SNCF, it shows how R&D managers and marketing executives can embed this customer-centric principle within their organisations.
- **Flex your assets.** Chapter 3 explains how customers are becoming ever more demanding. They increasingly want tailored products and services where and when they desire. It describes the trend towards mass customisation, and how new tools (such as robotics and 3D printers) and new approaches (such as social manufacturing and continuous production) can help operations and supply chain managers "flex" their production, logistics and

service assets to satisfy demanding customers better and more cheaply. It draws on examples from cars (BMW and Volkswagen), pharmaceuticals (GSK and Novartis), cement (Cemex), soft drinks (Coca-Cola) and energy (GDF-Suez and GE). The goal of flexing assets is not only about saving resources, such as carrying less inventory, but also about saving time – a business's most valuable resource. Studies of Saatchi & Saatchi + Duke and W.L. Gore reveal how managers can draw out the most from their staff by creating a simpler and more agile organisation.

- **Create sustainable solutions.** Chapter 4 demonstrates how companies can implement sustainable practices such as "cradle-to-cradle" (where components and materials are repeatedly recycled) in the design and manufacture of waste-free products. Based on case studies of Kingfisher, Levi Strauss, method, Tarkett and Unilever, the chapter provides insights into how R&D and manufacturing managers can develop self-sustaining solutions that help both businesses and the environment.
- **Shape customer behaviour.** Drawing on research in psychology and behavioural economics, as well as on the pioneering work of organisations such as Barclays, IKEA, Khan Academy, Nest and Progressive, Chapter 5 shows how companies can influence consumers into behaving differently (for example, driving less or more safely) and feeling richer while consuming less. It also shows how marketing managers can improve brand loyalty and market share by tailoring frugal products and services more closely to the way customers actually think, feel and behave – and by properly positioning and communicating the aspirational value of these frugal solutions.
- **Co-create value with prosumers.** Chapter 6 looks at ways consumers – especially the tech-savvy millennial generation (those born between 1982 and 2004) – are evolving from passive individual users into communities of empowered "prosumers", who collectively design, create and share the products and services they want. As a result, R&D and marketing leaders at firms like Auchan are working with do-it-yourself (DIY) and crowdsourcing pioneers, such as TechShop and Quirky, to bolster

and harness the collective ingenuity and skills of consumer communities. Additionally, big brands such as IKEA are linking up with start-ups such as Airbnb to develop a "sharing economy" in which consumers share goods and services. The chapter also outlines how sales and marketing managers can build greater brand affinity and deepen their engagement with customers by co-creating greater value for all.

- **Make innovative friends.** Firms such as GE and Ford are ensuring that the R&D function is lean, flexible and highly networked. Chapter 7 shows how R&D and operations managers can develop frugal products, services and business models more efficiently by collaborating with diverse external partners (such as suppliers, universities, venture capitalists and start-ups) than by working alone.

Chapter 8 discusses how firms can foster a frugal innovation culture. It shows how leaders of companies such as Aetna, Danone, IBM, Kingfisher, Marks & Spencer, PepsiCo, Renault-Nissan, Siemens and Unilever are radically changing the culture of their organisations – and altering employees' thinking too – as they strive to implement the six principles of frugal innovation. In doing so, these pioneering companies are rewriting the rules of the game – and even changing the game entirely – in their respective industries.

The chapter contains guidelines to help senior managers identify and prioritise the principles they can implement to achieve better results faster. It provides this guidance from within a change management framework that outlines the what, how, and why of adopting a frugal innovation culture within a company. Lastly, the chapter addresses how functional leaders in charge of R&D, strategy, manufacturing, finance, operations, marketing and sales can individually and collectively foster a frugal innovation culture within their firms.

But first, let us begin by looking at the disruptive nature of a frugal strategy when implemented in a traditional multinational company used to operating in Western markets; and see why so many more established companies feel compelled to follow the same path.

Navi Radjou and Jaideep Prabhu
October 2014

1 Frugal innovation: a disruptive growth strategy

IN 1999, JEAN-MARIE HURTIGER, a senior manager at Renault, a French carmaker, was given what seemed like an almost impossible task. His boss, Louis Schweitzer, then Renault's CEO, wanted him to create a modern, reliable and comfortable car that would retail at $6,000.

Two years earlier, Schweitzer had visited Russia where, to his dismay, he had discovered that the Lada – a locally made car priced at $6,000 – was selling fast, while Renault's fancier cars – twice as expensive as the Lada – had few buyers. As Schweitzer recalls:

> *Seeing those antiquated cars, I found it unacceptable that technical progress should stop you from making a good car for $6,000. I drew up a list of specifications in three words – modern, reliable and affordable – and added that everything else was negotiable.*

Schweitzer instructed Hurtiger, an engineer by training with international management experience, to build a $6,000 car that matched these specifications.

Technically, Hurtiger could engineer a stripped-down version of a car for that price. But, like the Lada, this car would be clunky and uncomfortable, and customers would question its safety. Renault had a reputation for elegance and quality to protect; launching a shoddy product would be a form of brand suicide. Hurtiger therefore realised that what his boss was asking him to do was not just create a cheaper car, but one that married high quality and affordability.

This "more for less" proposition was at odds with Hurtiger's long experience. R&D engineers in the West are taught to push the frontiers of auto technology by adding features to existing products. Indeed, Western car companies invest billions in R&D to create ever more sophisticated products, in order to differentiate their brands from competitors' and charge customers more for the privilege. Schweitzer's "more for less" proposition seemed to flout the conventional "more for more" business model that had proven so lucrative in consumption-driven Western economies over the previous five decades.

Both Hurtiger and Schweitzer recognised that they would first have to change the way Renault employees think. Creating a $6,000 car required not just a new business model, but a new mental model. This would amount to an immense cultural shift in a company that was over 100 years old and for decades had designed high-quality cars – some for the premium market – primarily for Western middle-class consumers. All Renault's French engineers had grown up in a resource-rich and relatively stable economy with a "bigger is better" R&D philosophy. Schweitzer and Hurtiger needed a new breed of engineers with a different outlook who could innovate under severe constraints and turn adversity into opportunity.

They made a bold decision. Rather than build the car in France, they would do so in an emerging market, where workers were familiar with a world of limited resources. The obvious place was Romania, where in 1999 Renault had acquired a local car company called Dacia. Hurtiger assembled a cross-cultural team made up of French designers and Romanian manufacturing engineers. The French brought their high-end design sensibility to the project and the Romanians brought their cost sensitivity. Renault's Romanian engineers had grown up in a harsh communist environment. Doing more with less was second nature, and they had both the motivation and the ingenuity to succeed.

And succeed they did. They created a car that used 50% fewer parts than a typical Renault vehicle and boasted a simpler architecture. Yet the car was also spacious. To accommodate the needs of rural Romanians, the original design brief had called for a vehicle that could carry "four adults, a pig, a sink, and 100 kilos of potatoes". To achieve more with less, the engineers designed symmetrical rear-view mirrors (so they could be used on either side of the car), a flatter-than-usual windscreen (curved windscreens create more defects and cost more) and a dashboard made from a single injection-moulded piece. All this reduced the use of raw materials and avoided costly tooling on the shop floor. The engineers also limited the number of pricey electronic components, making the car easier and cheaper to produce and repair. The result was a robust saloon car with a minimalist, modern design that met stringent quality and safety standards. In 2004, Schweitzer proudly unveiled the Logan, a no-frills car priced at €5,000 ($6,000).

For Renault, the Logan was not only a technical success; it soon became a huge business success too. The carmaker initially planned to sell the no-frills saloon car to value-conscious consumers in emerging economies in eastern Europe and the Middle East. To Renault's surprise, the Logan also found a market in affluent western Europe. Especially after the recession of 2008, budget-conscious consumers in the West began clamouring for affordable products like the Logan that delivered better value for money. In 2010, a report by L'Observatoire Cetelem, which studies European consumer behaviour trends, revealed that on average 29% of Europeans (and 39% in the UK) were willing to buy a low-cost car. Suddenly, Renault could no longer keep up with demand.

To capitalise on this growing demand, Renault developed an entirely new entry-level product line under the Dacia brand. As well as the Logan saloon car, the Dacia brand now includes the Logan van, the Logan pickup, the Sandero hatchback, Duster SUV (sports utility vehicle) and the Lodgy minivan. Dacia is now the fastest-growing car brand in western Europe (including in the demanding German market). Renault's entry-level products, mostly sold under the Dacia brand, have become the carmaker's cash cow, accounting for over 40% of the company's global sales in 2013, compared with 20% in 2008.[1] These products also generate greater than average margins for Renault due to a strict no-discounts retail policy. To top it off, Dacia products are eco-friendly: 95% of the parts in every Dacia are recyclable. With its successful launch of Logan – and subsequently other Dacia-branded vehicles – Renault created a new segment of "low-cost vehicles" in the automotive industry that combine quality and affordability. In doing so, it established itself as a pioneer of frugal innovation.

Renault, however, could not afford to rest on its laurels, as it faced two major challenges. First, the huge commercial success of Renault's entry-level vehicles had whetted the appetite of Western rivals, such as Volkswagen and Opel (part of GM), which were looking to launch their own low-cost brands. Second, Renault would need to expand its entry-level segment with even more affordable vehicles than its Dacia line to meet the needs of hundreds of millions of first-time car buyers in large emerging markets like India, China and Brazil.

Carlos Ghosn, who succeeded Schweitzer in 2005, was not intimidated by these challenges. Unlike most Western CEOs, he had a truly multicultural background and a track record of tackling the intractable. A Brazilian-born French national of Lebanese descent, Ghosn had made his mark in the early 2000s by successfully turning around Nissan, a nearly bankrupt Japanese carmaker, before becoming CEO of both Renault and Nissan in 2005.

Ghosn believed that the only way Renault could compete in the entry-level vehicle segment in both developed and emerging markets was by continually out-innovating rivals. In particular, he wanted Renault to learn new, cost-effective innovation techniques from emerging markets that could serve the company well in its home market too. After several visits to India (where Renault and Nissan had joint ventures with local partners), Ghosn became intrigued by the Indian ability to innovate faster, better and cheaper. Impressed, he coined the term "frugal engineering" to describe the ability to innovate quickly and at low cost under severe resource constraints, a resourceful skill that was common in several emerging markets.

Ghosn realised that, even after the Logan's success, his Western engineers needed to master the art of frugal engineering completely if they were to continue to produce ever more affordable cars that delivered greater value at lower cost. He also realised that this was not going to be possible with an outlook shaped by resource-rich, stable Western markets. And so in 2012 Ghosn sent Gérard Detourbet, who was head of Renault's entry-level segment, to Chennai in southern India to write the second chapter in the company's frugal innovation journey. In Chennai, Detourbet leads an R&D team that is building an entirely new car platform called CMF-A, which will be shared by Renault and Nissan to develop a wide range of ultra-low-cost, high-performance vehicles aimed at India and other emerging markets.

Ghosn's ultimate aim is to bring the principles of frugal thinking, acquired and honed in resource-constrained India, to Renault's Paris headquarters and use them to develop a new generation of affordable, high-quality vehicles for Western consumers. In doing so, Ghosn is leading a frugal revolution in the West that other CEOs in other firms and sectors are also signing up to.

Before looking at the "how" of frugal innovation – that is, the tools and techniques for implementing a frugal strategy discussed in subsequent chapters – let us first consider the "what" and "why". Specifically, what are frugal innovation's unique characteristics? And why has it become today's most pressing management issue?

The rise of the frugal economy

Several profound economic changes account for the rise of frugal innovation in the developed world. First, the advanced economies have entered an age of austerity in which the notion of frugal living and consuming is becoming mainstream. Over the past decade, the middle classes in the US, Canada, Europe, Japan, Australia and elsewhere have seen their incomes stagnate and their purchasing power shrink. Adjusted for inflation, the real median household income in the US increased by merely 19% between 1967 and 2013. According to a 2014 Pew Research survey, only 44% of Americans define themselves as middle class, a nine percentage point drop since 2008. Over the same period, the number of Americans who believe that they have fallen into a lower income class has shot up from 25% to 40%. Moreover, since 2009, 95% of all income gains in the US have gone to the top 1% of earners. The richest 20% of Americans now account for over 60% of the country's consumer spending.

In parts of Europe where recession persists, deepening poverty is eroding middle-income purchasing power. Spain and Greece have been most affected, but wealthier states such as France and Germany have not been spared. For instance, only 58% of Germans now identify themselves as middle class compared with 65% in 1997. In

France, between 2008 and 2012, average salaries fell by 24%, while the cost of living rose by 30%.

As a result of these economic pressures, North American and European consumers are becoming increasingly concerned about getting value for money, and are opting for cheaper products. For example, nearly one-third of European consumers, especially young people who have only known recession in their adult lives, are now more interested in buying a low-cost rather than a premium car. Car purchases by Americans aged 18–34 fell 30% between 2007 and 2012. In Japan, where the poverty rate shot up to a record 16% in 2012, consumers are shifting from premium brands to inexpensive private-label products in retail stores. Rather than eating out, more Japanese workers now pack their own lunch, earning themselves the nickname *bento-danshi* or "box-lunch man".

These changes are here to stay. Thomas Piketty, a French economist, predicts that income inequality in developed economies will widen in the coming decades, as long-term annual growth rates remain stuck below 2%.[2] With inflation outpacing their incomes since 2007, 76% of US adults now believe their children will be financially worse off than them in the future. And well over half of consumers, surveyed by Booz & Company (now Strategy&), a global management consultancy, in late 2012, reported that they would not revert to their previous spendthrift behaviour when times improve. Booz calls these frugal buyers "permanently value-sensitive consumers".

It is not only consumers who have become more cost-conscious. Governments throughout the developed world are also watching the pennies. Ageing populations, spiralling health-care costs, the pensions burden, huge debts and deficits since 2008 have conspired to introduce a new spirit of austerity in the US, Europe and Japan.

The UK's Conservative-led government is committed to dramatic budget cuts of £81 billion ($128 billion) over four years (4.5% of 2014–15 GDP). This includes an 8% reduction in the defence budget by 2015, a 30% reduction in local government spending and a 16% decrease in the police force. In the US, Barack Obama has proposed a three-year freeze on discretionary spending, and the Pentagon is considering cutting the US army to its smallest size since the second world war. Spain, Italy and Greece are doing the same. And if the Scandinavian