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chotuKool: “Little Cool,” Big Opportunity

In early 2013 a small team led by Gopalan Sunderraman, vice president of corporate development at Godrej & Boyce Mfg. Co Ltd.—one of the companies owned by Godrej Group, a large Indian conglomerate—was preparing to launch an innovative low-cost refrigerator. The appliance had been developed expressly for the approximately 80% of Indians who lacked access to refrigeration, a market that Godrej had never before targeted. Over the course of three years, Sunderraman and his team had learned a lot about building and introducing a low-cost product with the potential to create a new class of customers. Now the time had come to execute on what they had learned.

The mandate to develop the product had come from Jamshyd Godrej, managing director and chairman of the board at Godrej & Boyce Mfg. Co Ltd. (later referred to as Godrej). Mr. Godrej was alarmed by the company’s shrinking share of the refrigerator market: as India’s economy grew, the country was becoming a target for multinational appliance manufacturers such as Haier and Samsung. Mr. Godrej thus had a choice to make: to continue to compete aggressively in the conventional refrigeration market or to innovate to create a much larger market. Mr. Godrej had chosen the latter strategy. That strategy had given birth to the low-cost refrigerator, designed to address the food-preservation needs of rural Indians unable to afford mainstream products.

Sunderraman had his work cut out for him. Mr. Godrej had envisioned the refrigerator as the first in a series of products that would redefine the company. As Navroze Godrej, executive director for strategy and innovation, explained, “In 35 years, we expect half our revenue to come from products and categories that are not currently in our portfolio.” A portable device capable of providing cost-effective refrigeration to hundreds of millions of Indians was just the kind of product Navroze had in mind. Thus a low-cost refrigerator was not simply a product for those who could not afford conventional refrigerators; it represented a potential shift in Godrej’s strategic direction, and a lot was riding on its success.

Sunderraman, a 30-year Godrej veteran who had held positions in several departments, including marketing, sales, manufacturing, supply-chain logistics, and strategy, was chosen to lead development of the refrigerator because of his deep experience and commitment to Godrej. His team at Godrej Innovation had worked hard to create a viable product; now they had to figure out how to sell it. Over the years Godrej had built successful brands in established markets for affluent Indian customers, but it was unclear whether and how those branding capabilities would translate to less affluent rural

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customers. Over the preceding few months Sunderraman and his team had discussed several launch strategies. After much deliberation, the team had settled on two options to present to Godrej executives.

The first was to develop an integrated supply chain to convey the product from the manufacturing plants to rural retail outlets. This option would require Godrej to invest in an entirely new sales, marketing, and distribution channel to reach new customers, including the millions of mom-and-pop shops scattered across the Indian countryside that appeared likely to be good customers for the product. The second option was to pursue the rural strategy while simultaneously marketing the product as an aspirational lifestyle brand for urban Indians. Initial market response to a soft launch suggested that Indians were becoming increasingly aspirational, and the urban component would require less integration and investment than the rural component.

On his way to Mr. Godrej's office to meet with the key Godrej executives that would decide on chotuKool's ultimate launch strategy, Sunderraman reviewed the many product launches he had participated in and reflected on how this one differed. "In the past, the center of focus was on products; it was not the context in which people lived," he later explained. "But . . . we have to look at the larger context of life. It is not about products or services but comprehensive offerings that include associated buying and consuming experiences. Customers will not be willing to try a new product until they find that it addresses an unmet need in a better way." Many questions competed for Sunderraman's attention. How should Godrej get its products to market? Who will really be the best customers for the new product? Should Godrej partner with an existing company to sell it? If so, which company? Developing the product was one thing; selling it was proving to be quite another.

Godrej: A Revered Brand

By 2012 Godrej was a household name in India, with its history rooted in a nineteenth-century grass-roots patriotic movement to resist the economic dominance of India's British colonial masters. The Swadeshi movement encouraged Indians to purchase products made in India by Indians in preference to imported British products. The company's first products were locks, safes, and other security equipment. In 1918, 20 years after its founding, Godrej introduced a breakthrough innovation: the world's first soap made without animal fat (this business has since grown and is now under the Godrej Consumer Products Ltd. umbrella). Hinduism, the religion of over 80% of India's population, reveres the lives of animals; the soap thus represented a valued innovation. "We score not only for Swadeshi, but for ahimsa,"^a the company proclaimed. Godrej also localized its products to suit the preferences of Indians in different regions. The company became so thoroughly identified with Indian values that the independence leader Mohandas Gandhi replied to a business magnate seeking his endorsement, "I hold my brother Godrej in such high regard that if your enterprise is likely to harm him in any way, I regret very much that I cannot give you my blessings."¹

Five years later the company manufactured its first *almirah* (a steel cupboard); it soon became a widespread tradition to give newlyweds a Godrej almirah. In the two decades that followed, Godrej developed a home-furnishing business and became even more entrenched in Indian culture. In 1943, to support its expansion, Godrej purchased more than 3,000 acres from the government of Bombay (now Mumbai).² The following year a devastating explosion at the Bombay docks left almost nothing unharmed but a Godrej safe, further entrenching the company's reputation for quality. In 1951, four years after India won independence from Britain, the nation held its first elections; the Electoral Commission asked Godrej to make the ballot boxes. With time at a premium, the company shipped

^a In Hindi, *ahimsa* means "compassion."

more than 1.5 million boxes to every corner of India. K.R. Thanewalla, a veteran employee, described the undertaking: “Our best was around 22,000 ballot boxes per day! We would be at the plant from quarter to seven onwards, and rarely left before midnight.” That massive effort further solidified Godrej as a revered brand.³

Godrej began manufacturing refrigerators in 1958. Sunderraman explained in an interview: “We went on to making cupboards, and from cupboards to furniture, and then we put a compressor on the steel ‘cupboard’ structure with insulation—and that’s how we started refrigerators.”⁴ Over the next several decades, Godrej continued to diversify its offerings, releasing products as various as hair dye and insecticides that prevented malaria.⁵

By 2012 Godrej enjoyed annual turnover of more than \$4 billion, operated 15 business divisions in 60 countries, and had over 25,000 employees. Its businesses ranged from industrial products like electric motors, tooling machinery, and power distribution equipment to consumer products like air-conditioners, microwave ovens, and refrigerators. “We have millions of people who touch our products every day,” Sunderraman said. “We in Godrej Group have both customer-centric products, such as soaps, and institutional-type products, like furniture.” Some of the Godrej Group companies are frequently ranked among the best places to work in India. (See **Exhibit 1** for Godrej Group’s revenues by division.)

Godrej has remained largely private; the Godrej family owns a controlling stake in the Godrej Group even though some subsidiaries are publicly traded. Remaining mostly private, in its executives’ view, affords the company the flexibility and patience necessary to enter new markets. Godrej saw a need for continual innovation to remain relevant. “Technology is radically changing consumer behavior, and we need to be relevant,” Navroze Godrej declared. “We need to get better at giving consumers what they want and not what we think they want.”⁶ Refrigeration was among the markets where he saw a need for reinvention.

Godrej Refrigerators

Godrej understood the business of selling refrigerators. While the company, being private, does not release detailed financial information, an analyst with the Economic Times estimated Godrej’s refrigerator sales in 2012 at Rs 1,700 crore (\$255 million); 2013 sales were estimated at Rs 2,100 crore (\$315 million).⁷ The company grouped its refrigerators into three main categories—Frost Free, Direct Cool, and Side by Side—each of which consisted of models ranging in price from \$250 to \$1,500 and in capacity from 99 to 600 liters. Only a small subset of the Indian population could afford even the least expensive models. (See **Exhibit 2** for a photograph of the three main types of refrigerators Godrej sold.)

Retailing in India was very fragmented and characterized by both the world’s highest number of retail outlets per capita (approximately seven per thousand people) and the least per-capita retail space (approximately two square feet per person).⁸ Thus selling refrigerators was limited to stores with large footprints. Godrej sold its refrigerators through two main channels, retail outlets and multi-brand outlets (MBOs), and was considering adding exclusive brand outlets (EBOs). Several appliance manufacturers, such as LG and Haier, owned and operated EBOs where they sold only their own products. None of these big-box stores enjoyed more than 1% of market share.⁹

The Growing Market for Refrigerators in India

Between 1990 and 2012, India’s real per-capita income nearly quadrupled, from \$385 to \$1,503.¹⁰ India was still considered a developing country, but it was urbanizing rapidly and acquiring a middle class. The growth of the middle class was largely fueled by India’s booming IT industry, which grew

from 1.2% of GDP in 1998 to 7.5% in 2012, generating estimated annual revenue of \$150 billion.¹¹ In 2012 the sector employed approximately 3.1 million people directly and 9.5 million indirectly, and accounted for one-quarter of all organized private-sector employment.¹² India's IT sector was a clear case of disruptive innovation creating prosperity for millions of people. Wipro, Infosys, Tata Consulting Services (TCS), and several other entrepreneurial pioneers built multibillion-dollar Internet and telecommunications businesses that succeeded in disrupting back-office operations in the United States and Europe. India's prosperity benefited Godrej, but had also caught the attention of multinational competitors, such as Haier, Samsung, and LG, that sought to take advantage of the nation's economic growth.

As Pranay Dhabhai, chief operating officer of the Chinese company Haier Appliances (India division), explained, "India is a key market for Haier's global operations, and the launch of our manufacturing and R&D unit is a reiteration of Haier's long-term commitment to the Indian market. Haier sees India as a strategically important market, and we may expand current capacities in the near future and are poised for high-speed growth in the coming quarters."¹³ With \$4 billion in sales in refrigerators globally in 2012, Haier was by far the largest refrigerator manufacturer in China.¹⁴ Though Haier's growth was largely attributable to its focus on designing its products and improving its operations in China to meet local demand, it was not new to global competition. With sales of barely \$550,000 in 1984, Haier had since become one of the world's largest appliance companies. By 2012, Haier had captured 8% of the global domestic-appliances market.¹⁵ (See **Exhibit 3** for photographs of Haier refrigerators.)

Competition from companies such as Haier, LG, and Samsung had an impact on Godrej's share of the Indian refrigeration market. In the early 1990s Godrej enjoyed an estimated 30% of the market; by the mid-2000s its market share had declined to 17%. That share declined even further as competition heightened, dropping to approximately 14% by 2012. Meanwhile Haier had posted an 18% compound annual growth rate in India since 2009. Like Godrej, most of its competitors targeted the approximately 20% of Indian households able to afford conventional refrigerators. (See **Exhibit 4** for an illustration of Godrej's competition.)

Though conventional refrigerators were still a luxury in India, the industry had been growing at a compound annual rate of 14% since 2007. Even after the global financial crisis of 2008, the industry posted 22% year-over-year growth in 2009 and an impressive 18% in 2010. The market was projected to reach almost \$1.2 billion annually in 2013. "The improved economic situation, higher disposable incomes and longer summers will be key reasons for [continued] growth," noted a 2016 report on the industry.¹⁶ (See **Exhibit 5** for growth in the refrigeration market since 2007.)

But the refrigeration boom did not reach much of rural India, where penetration was strikingly low at less than 10%.¹⁷ Godrej executives saw an opportunity to address the needs of the hundreds of millions of Indians who could not afford conventional refrigerators. "Instead of continuously trying to improve performance [of our existing products] to be more and more competitive, the idea is to create a platform that just meets the needs of consumers," Sunderraman explained. "This way, you can create a completely different market. Every unsolved problem of the society today is a potential new business opportunity for tomorrow."¹⁸

A New Path for Innovation

The competition for market share led Godrej executives to rethink their refrigerator business strategy, focusing on new business in the unserved and underserved market. Just as Wipro, Infosys, and TCS had developed successful disruptive business models in the IT industry, Mr. Godrej wanted

to do the same in the appliance industry. Armed with the hypothesis that a low-cost refrigerator could be profitable, Godrej executives invited Harvard Business School Professor Clayton Christensen to a conference to discuss how disruptive innovation applied in India.

The innovation conference was hosted by Godrej and the Confederation of Indian Industries (CII).^b The notion that Godrej could build a viable business that targeted the hundreds of millions of Indians that could not afford many of Godrej’s products was reinforced at the conference. The conference was attended by more than 70 Godrej employees including several senior level staff.

The conference led Godrej to engage Innosight, an innovation consulting firm with expertise in disruptive innovation, to help them develop a product and business model for low-income Indians. Acting on its vision to fulfill its new strategic initiative, Godrej set up an Innovation Center to pursue opportunities that could create entirely new markets for the company. The center’s diverse employees, drawn from various Godrej Group’s businesses, were charged with fostering an innovation culture to pursue disruptive innovations. As Navroze Godrej told *Business Today India*, “This [opportunity] has driven us to establish this space, because growth will not come unless we think far enough into the future in a way that is new and innovative.” Godrej expected a lot from the Innovation Center, he added: “We have set fairly ambitious targets for ourselves as a Group and want to grow to ten times our current size in ten years.”¹⁹

Navroze gathered a team of 20 full-time employees, supplemented by 100 more working on time-bound projects. Because of the significant market opportunity that refrigeration presented, and the intense competition in the conventional refrigeration market, the first large project the team tackled was low-cost refrigeration.

The Market Opportunity for a Low-Cost Refrigerator

Analysts at Godrej saw a promising market opportunity for a low-cost refrigerator. If Godrej could achieve 50-percent penetration of the 80% of Indian households that lacked refrigeration, by offering a new product priced at \$69, it could generate sales of approximately \$6.8 billion. As the technology improved and Godrej added more features to the product, both sales and margins would increase.

These numbers were attractive, but the dynamics of serving these markets presented daunting difficulties, which Sunderraman enumerated as “the challenge of a thinly spread market, low earning power of consumers, limited awareness of users, and vast cultural diversity.”²⁰

Designing a Low-Cost Refrigerator

The new team focused first on reducing the cost of a conventional compressor-based refrigerator by making smaller units with less expensive parts. They soon realized that the customer’s up-front cost, plus the ongoing costs of electricity, maintenance, and space made the price of owning and operating a refrigerator too high for the target demographic, rural Indians without reliable electricity. Furthermore, they could not reduce the cost of the refrigerator’s most expensive and power-hungry component, the compressor, enough to make a meaningful difference.

Thus the team turned to a very different design strategy, and in doing so pivoted away from how Godrej had traditionally done market research and design. The team aimed to thoroughly understand how low-income people in rural areas used a refrigerator or made do without one. Sunderraman

^b CII is an Indian nonprofit that seeks to create an enabling environment in which Indian industry can thrive. Its members include some of India’s largest companies, including Godrej Group, Tata Group, Infosys, and Bajaj.

recalled a lesson he learned from Professor Shoji Shiba through the Visionary Leaders for Manufacturing Program, noting, "If you want to understand fish, you need to jump into the fish bowl and then swim with them, and only then will you understand how the fish live." He and his team conducted intensive field research. Visits to the homes of potential customers generated three key insights about how people in rural communities live without refrigeration. First, they found that many who owned refrigerators kept them unplugged for fear of damage from power surges. The team had initially envisioned a low-powered electric refrigerator. But the requirement of constant connection to an outlet clearly had to be scrapped.

Second, the team learned that, among rural Indians who owned a refrigerator, few utilized its full storage capacity; they typically refrigerated only a few foodstuffs. Many also lived migratory lives, moving wherever they could find work. Thus, compactness and portability mattered far more than the team had previously realized.

The third insight had to do with how rural Indians handled perishable food and avoided spoilage. It was common practice to store perishable food in a tightly sealed container and place it in a water-bath, which kept the food a bit cooler than room temperature. (See **Exhibit 6** for a schematic of a water bath.) Food was also purchased and cooked daily to avoid spoilage, a practice that is typically more expensive than buying and cooking in bulk. This practice, referred to as "just right," was deeply ingrained in rural Indians' shopping and food preparation habits.

A Low-Cost Technology: Peltier Cooling

Sunderraman and his team decided to create a much smaller refrigerator that would not rely exclusively on electricity, and that would cost around \$60. To do so, the team borrowed Peltier cooling technology, a thermoelectric cooling technology which was widely used in the computing industry to keep laptop computers cool.

The advent of semiconductors in the 1960s led to the improvement of thermoelectric cooling technology. Thermoelectric cooling operates on the principle that a cooling effect is created when an electric current passes through two dissimilar conducting materials. In Peltier cooling, a voltage is applied to two semiconductors joined at two separate junctions (Bismuth-Telluride is frequently used). When a current passes through the junctions, the flow of electricity causes one junction to heat up and the other junction to cool down. The degree of heating or cooling achieved largely depends on the types of semiconductor used. (See **Exhibit 7** for a diagram illustrating the Peltier cooling effect.)

Peltier cooling is rarely used in larger domestic refrigeration because it is much less efficient and significantly more expensive (in terms of cost per degree of cooling) than compressor-based cooling. But Peltier also has several major advantages: lack of moving parts or circulating liquid, very long life (commercial coolers can last for 40 years), invulnerability to leaks, compactness, and flexible shape. Using Peltier cooling, Sunderraman and his team were able to create a product with just enough cooling functionality to preserve most perishable food items that people in rural villages purchased.

chotuKool, the Cool Little Refrigerator

The result was chotuKool, a small thermoelectric refrigerator powered by a rechargeable battery, a laptop-like power supply. (See **Exhibit 8** for a photograph of the original chotuKool.) The first model weighed 16 pounds, had a capacity of 35 liters, and was able to maintain a temperature of 15 degree Celsius (59 degrees Fahrenheit). It consumed only half the electrical power used by a conventional refrigerator and consisted of only 20 components and no moving parts. Depending on the size, conventional refrigerators could contain more than 200 components. To choose a color for the first

chotuKool, the team held a town-hall meeting in the village of Maharashtra; the villagers chose cherry red. The team planned to sell chotuKool for \$69. As in the case of the personal computer, whose cost per calculation was initially significantly higher than that of the mini-computer, the chotuKool's cost per cooling unit was higher than that of a conventional refrigerator. But the product's initial cost was much lower: the chotuKool cost approximately one-third as much as Godrej's least expensive refrigerator. The chotuKool was lauded as a technological marvel. It won five prestigious innovation awards, including the Edison Award and the Infosys Innovating for a Better Tomorrow Award. The buzz was promising; hundreds of articles and interviews about the product appeared in the Indian media.

Godrej was accustomed to releasing innovative products: in 2001 the company had been the first to launch an all-green refrigerator in India, and in 2005 it had released the first inverter-based air conditioner. But in its 100-plus years of existence, Godrej had never released a product like chotuKool, whose success had the potential to cannibalize sales of its conventional refrigerators. "At first some of the product managers in our refrigerator business did not like the idea of chotuKool," Sunderraman observed. "It had to take some convincing, but they got on board because Mr. Godrej was committed to this initiative."

Selling chotuKool: Results of the 2009 Soft Launch

Godrej engineers eagerly sought feedback from their new customers. Shortly after the soft launch, the team realized that the cooling specifications did not meet customers' needs. "We learned that there is a threshold of performance below which the market could not use," Sunderraman explained. "We eventually had to improve the cooling performance by 35 percent."

The feedback that the team elicited from the market was not limited to technical shortcomings. "My experience in developing chotuKool has taught me that it is not just the technology or the product that matters," Sunderraman explained. "It is also the blending with the business model and reaching out to customers that is really important." It turned out that rural consumers cared as much about branding as did urban customers, and, in Sunderraman's words, "chotuKool does not get negative press, but it also does not get the positive virality it needs." Given a limited marketing budget, Godrej was depending on word of mouth as a marketing engine. Typically, when people purchased conventional refrigerators, they were quick to inform friends, family, and neighbors. Godrej had hoped that buying a chotuKool would provoke the same behavior, especially considering the awards the product had won. But people who purchased chotuKool tended not to tell their friends and neighbors. Sunderraman traced this reluctance to a nationwide increase in aspirational consumption attributable to the proliferation of smart phones, tablets, and televisions. "Overall economic growth and incomes were growing at a rate of 5%, but people's aspirations were growing at a rate of 20% in the same period," Sunderraman noted. "All of a sudden people wanted to be associated with a product that made them proud, not a product that meant they could not afford a fridge."

To Godrej's utmost surprise, ChotuKool's most enthusiastic potential customers turned out to be mom-and-pop shops. (See **Exhibit 9** for an example of an informal retail outlet.) The chotuKool enabled these shops to sell more profitable products: those who had sold unrefrigerated drinks, for instance, could charge a bit more for cold drinks and increase their profit margins. According to Sunderraman, "We started finding applications for chotuKool not only in the home but also in the small kiosks and flower vendors that could keep their products fresh for longer periods and earn more money."²¹ Godrej executives had not previously considered this market but were astonished by its promise. Approximately 92% of the retail market in India was informal.²² Few had refrigeration; the 15 million

such shops across India presented a huge opportunity.²³ If Godrej sold chotuKool to 50% of these retailers, it would generate more than \$500 million in sales.

It also became abundantly clear that in rural India Godrej could not leverage its existing retail channels, which served the more affluent and urban market; the company would have to build a new channel or enter into a partnership. The team thus pursued a distribution partnership with India Post, the government-operated postal system, which reached even the most remote parts of the country.

The lessons of the 2009 pilot sent the chotuKool team back to the drawing board to improve the technology and make the product more aspirational.

chotuKool Version 2.0

The team improved the chotuKool's cooling performance by 35% while making the product more aspirational. But neither accomplishment was as impressive as its ability to do both while keeping the chotuKool's cost virtually unchanged. "We made it extremely attractive and stylish," Sunderraman explained. "It no longer looks like an old box because people wanted something more aspirational." (See **Exhibit 10** for a comparison of versions 1.0 and 2.0, and **Exhibit 11** for a conceptual design of the version 2.0 website.)

Customers could personalize their chotuKools by choosing from a range of colors and patterns. "While communicating the core benefit is crucial, we need to look at how people want to express themselves and what they want to say about their own lifestyles," Navroze noted. "This is not a brand telling you what you want. . . . It is a brand asking its users: how would you like to see something you have created come to life?"

At a weekly chotuKool meeting a senior member of the team asked, "Why are we restricting ourselves to the bottom of the pyramid and low-end customers? We should be able to market this product across the board to all segments of the population." Sunderraman elaborated: "The thinking behind this was simple. If it is acceptable to the richer segment, there would no longer be any stigma attached to owning a chotuKool." Since the new version of the chotuKool also cost about the same, there didn't seem to be any risk.

In addition to positioning the chotuKool as suited to both rural and more affluent urban customers, executives also recognized that the small shops represented a huge market. The team had to decide how best to position this new and apparently disruptive product.

Choosing a Launch Strategy

Sunderraman and his team believed that chotuKool had the potential to significantly impact the lives of hundreds of millions of Indians for whom refrigeration was a luxury. "For Godrej, chotuKool is not just an experiment," Sunderraman declared. "I am an incurable optimist, and believe there is a huge market for an affordable and aspirational chotuKool." The lessons that he and his team had learned from their field research had informed their product design, and the soft launch was now informing how they thought about their go-to-market strategy. Sunderraman and his team were considering two options for the big launch of the little cooler:

The Rural-Integration Option. Godrej would develop a strategy to target the 80% of Indian households without access to refrigeration. This strategy would focus exclusively on selling to such households and to mom-and-pop shops. Because this market is largely rural and Godrej had not previously targeted it, the company would need to develop an entirely new sales-and-distribution

network, or partner with another company, to implement this strategy. Proponents argued that Godrej could continue its partnership with India Post to distribute chotuKool throughout the country. Others asserted that the changes they had made to the product called for investment in training India Post employees. Other possible partners were microfinance banks and retailers like Sakhi Retail, a social enterprise dedicated to improving the health and well-being of rural households.

Proponents of this option also pointed to the immense market opportunity it represented. They invoked analysts' predictions that chotuKool could create entirely new markets for Godrej. There was also the possibility of exporting chotuKool to other countries that had similar rural demographics with India. If Godrej could learn how to sell chotuKool to an entirely new segment of the Indian populace, they argued, the company could leverage that expertise to sell other products to the segment.

But there was pushback from some members of the team. These opponents cited cost, the value of the Godrej brand, and opportunity costs. For Godrej to be successful, they argued, the company would have to build an entirely new organization to handle sales, marketing, engineering, and distribution; a long time would pass before Godrej would reap the benefits. They also worried about associating Godrej's brand with an underprivileged and unenvied population. What would happen if Godrej invested significantly in a rollout and chotuKool was unsuccessful? A chotuKool failure threatened both Godrej's position as a revered brand and its flawless record of product innovation. "Godrej has been making its brand contemporary externally, but I think the challenge for them would be to be disruptive as an organization," observed Tina Jain Mehta of Pineapple Consultancy. "It's the ultimate challenge: to see if an organization that ain't broke can be fixed to run better."²⁴ Although a minority position, several team members wondered if this was the time to double down on investments in the conventional refrigeration space to win back market share from international players like Samsung, Haier, and LG.

The Urban-Rollout Option. The second option was to pursue India's growing urban middle class hand in hand with the rural-integration option. There were clear benefits to this strategy. In addition to leveraging its existing value chain, Godrej would not need to invest as much in educating consumers or sales personnel about what chotuKool was and how it functioned. Those in favor of this option pointed to the low investment risk, the growing purchasing power of this demographic, and the potential for chotuKool to piggyback on, and even enhance, the status of the Godrej brand. They predicted that Godrej would not need to invest heavily to market chotuKool to the urban population, and thus that the returns from this strategy would surpass, and complement, those from the rural-integration option. Analysts expected India's middle class to reach 200 million by 2020 and 475 million by 2030.²⁵ Targeting future members of the middle class as they began their careers could further solidify Godrej as the Indian brand of choice.

The other benefit of this option was that establishing chotuKool as an aspirational brand would insulate the less affluent from feeling ashamed to buy it. Persuading a consumer who could afford a conventional refrigerator to purchase a chotuKool would instantly send a message to the less affluent that chotuKool was cool and aspirational. Some thought that the company could position chotuKool as both an aspirational small refrigerator and a well-designed piece of furniture that could double as a seat or small cabinet in small urban homes. But this option too generated some worries. Some objected that selling chotuKool to India's rising middle class might cannibalize Godrej's existing sales in the sector. A sales manager wondered aloud how he would incentivize his staff to sell a product whose price was one-third that of Godrej's least expensive refrigerator. A few mentioned the original mission of the chotuKool and worried that selling to the middle class might distract the company from that agenda.

Whichever option Godrej eventually chose, chotuKool had started something within the company. The Innovation Center, with its focus on India's vast unmet needs and those of other developing regions, such as Africa, was already a positive outcome of this initiative. But before taking on the rest of the world, chotuKool needed to conquer India.

As Sunderraman stepped into Jamshyd's office, he was ready to discuss his team's progress and the important decisions they had made to date. But he also knew that the most important decision about chotuKool would be made during this meeting.

Exhibit 1 Divisions, Revenues, Activities, and Ownership Structure, Godrej Group, 2014

Business Division	Revenues (in		Godrej	Public or	Headquarters
	\$ millions)	Activities			
1 Godrej Properties	278	Real estate and property development	61	Public	India
2 Godrej Agrovet	523	Animal feeds, agri-inputs, oil palm, processed poultry products, and rural retailing	64	Private	India
3 Godrej International	312	International trading	100	Private	Isle of Man
4 Godrej Industries	234	Industrial chemicals: fatty alcohol and acids, glycerine, edible oils; Estate management, finance, and investments	58	Public	India
5 Godrej Consumer Products	1,290	Personal and household care products (soaps, detergents, hair color, toiletries, etc.)	59	Public	India
6 Godrej Infotech	13	Infotech services, ERP practice and software development	52	Private	India
7 Veromatic International	7.9	Beverage dispensing and vending machines	100	Private	Netherlands
8 Godrej (Singapore)	2.8	Steel furniture and equipment	100	Private	Singapore
9 Mercury Manufacturing	6	Furniture and office equipment	100	Private	India
10 Godrej (Vietnam)	6	Steel furniture and office equipment	100	Private	Vietnam
11 Godrej Efacec Automation & Robotics	13	Automated storage and retrieval systems, and automated warehousing solutions	49	Private	Portugal
12 Godrej & Khimji (Middle East)	8	Steel furniture and office equipment	49	Private	Oman
13 Geometric	167	Engineering and software services	31	Public	India
14 Godrej & Boyce Manufacturing	1,323	Appliances, locks, industrial motors, etc.			
Total	4,184				

Source: Godrej corporate profile.

Exhibit 2 Representative Mid-Range Godrej Refrigerators



Frost Free, \$1,178



Direct Cool, \$850



Side by Side, \$1,386

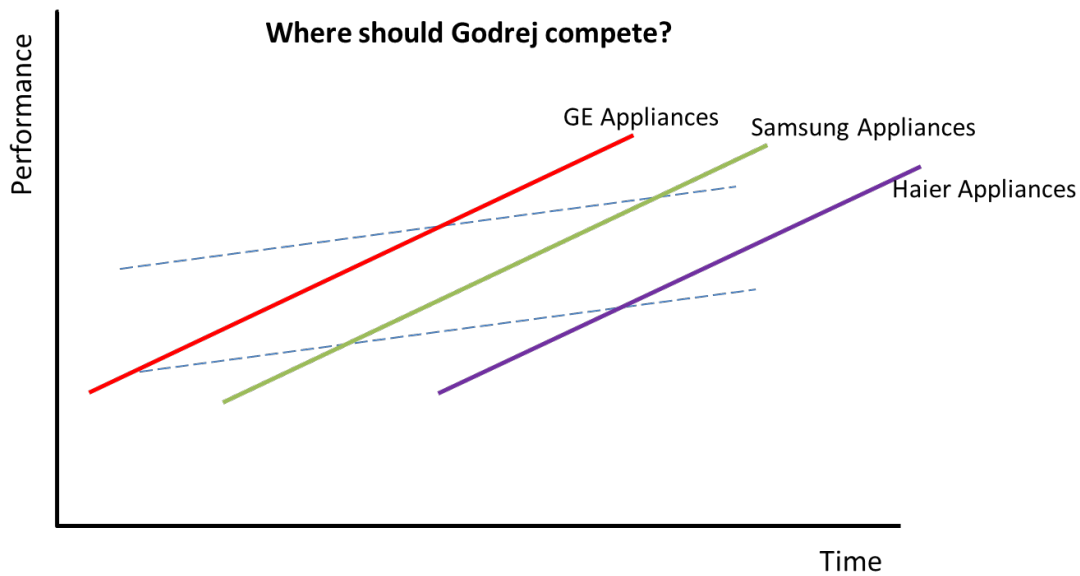
Source: Godrej Appliances website.

Exhibit 3 Representative Haier Refrigerators



Source: Haier website:
<http://www.haier.com/in/products/refrigerator/minibar/hr-62hp.shtml>;
<http://www.haier.com/us/products/kitchen/refrigerators/french-door-refrigerators/hb21fc75ns.shtml>;
http://www.haier.com/pk/products/refrigerator/top_freezer_direct_cooling/hrf-340m.shtml.

Exhibit 4 Disruption in the Indian Refrigeration Appliance Industry



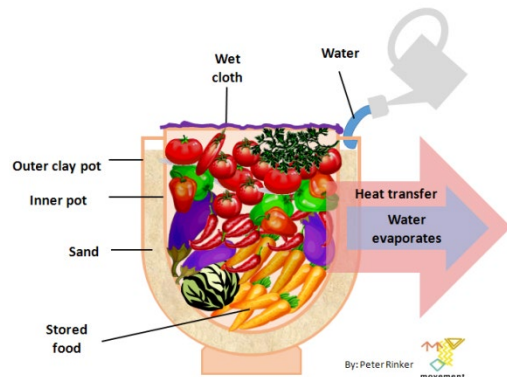
Source: Casewriter.

Exhibit 5 The Indian Refrigerator Market, 2007–2012

Year	Sales (in \$ millions)	Year-over-Year	
		Growth (%)	
2007	451		
2008	540	20	
2009	658	22	
2010	775	18	
2011	910.0	17	
2012	1,074.2	18	

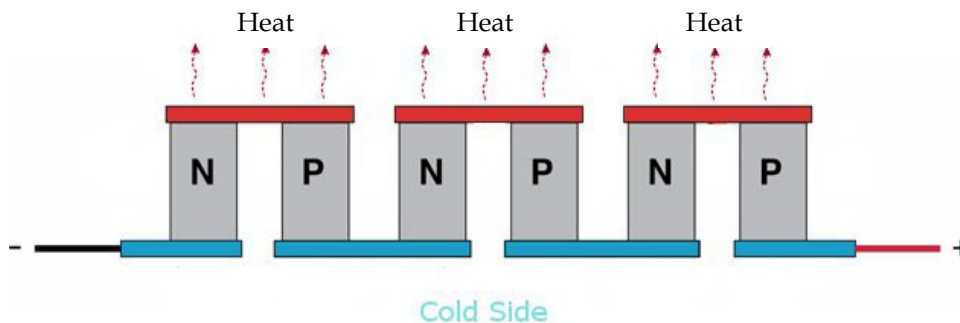
Source: Statista.

Exhibit 6 Typical Water Bath Used to Cool Foodstuffs



Source: Peter Rinker, "The Clay Pot Cooler: An Appropriate Cooling Technology," https://movement-verein.org/wp-content/uploads/2015/07/informationen_projekte_clay_pot_cooler_2014_en.pdf, accessed May 23, 2016.

Exhibit 7 Peltier Cooling Effect



Source: "Peltier Elements Make Heat, Cold, or Electricity," <http://www.survival-manual.com/electricity/peltier-elements.php>, accessed May 23, 2016.

Note: The N & P on the image above represent two dissimilar semiconductors.

Exhibit 8 chotuKool Version 1.0, in Cherry Red

Source: <https://www.flickr.com/photos/soumik/5928815049/in/album-72157627050988299/>, accessed September 21, 2016
© Pixel Mark 2011.

Exhibit 9 A Typical Rural Indian Retail Shop with Cherry Red chotuKool 1.0

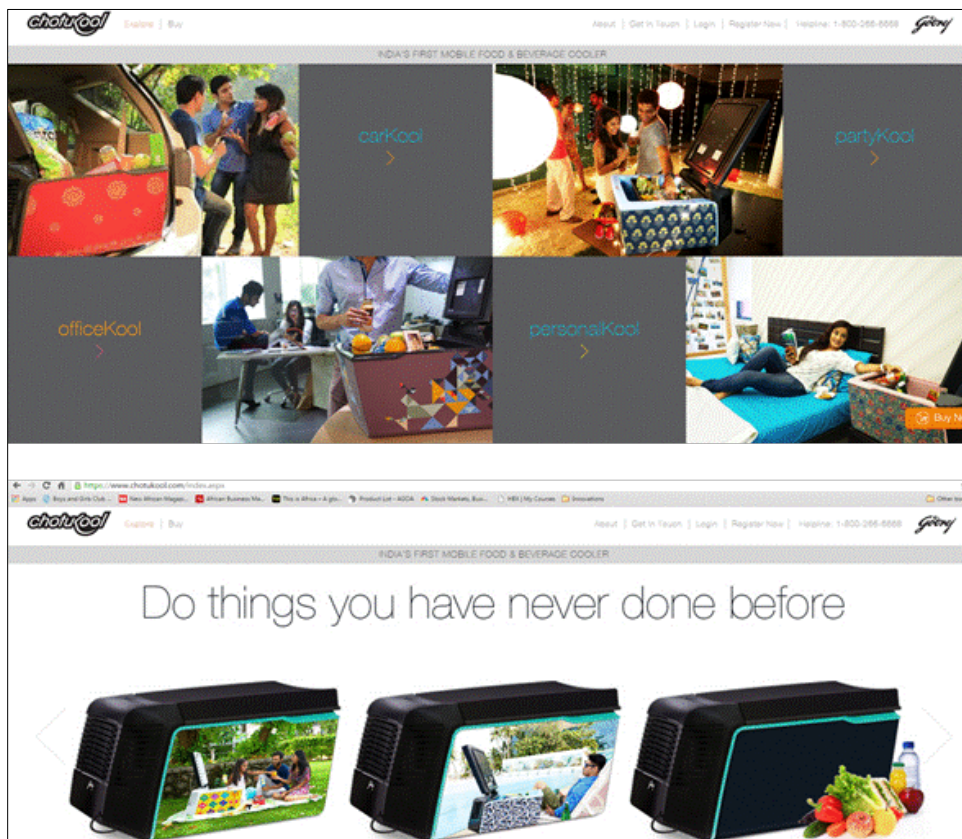
Source: Company documents.

Exhibit 10 Comparison of chotuKool Versions 1 and 2

Feature	chotuKool version 1	chotuKool version 2
Color	Red	Multi-colored
Customizability	No	Yes
Target Market	Rural	Rural and Urban
Disribution Channel	India Post, Local Distributors	India Post, Local Distributors, Website, Godrej Experience Center
Price of chotuKool	\$69	\$69

Source: Casewriter.

Exhibit 11 Website for chotuKool Version 2



Source: Godrej website for chotuKool, <https://www.chotukool.com/>, accessed May 23, 2016.

Exhibit 12 Some Development Indicators, India

	Population (millions)		Rural Females per 1,000 Males	Domestic Product per Capita	% of People living on less than \$2 per day				Literacy Rate (%)		Infant Mortality (per 1,000 live births)
	2011	2011	2011	2013	1993	2004	2009	2011	Male	Female	2007
India	1,210	69	940	1,498	82	76	69	59	82	65	55
Rural	833		947						79	59	
Urban	377		926						90	80	

Source: Poverty and per capita data: World Bank, <http://povertydata.worldbank.org/poverty/country/IND>, accessed May 23, 2016.

Population data: Census of India, Census provisional population totals 2011, <http://censusindia.gov.in/2011census/censusinfodashboard/downloads.html>, accessed May 23, 2016.

Infant mortality data: Economic Survey 2009-2010, Ministry of Finance, Government of India, Table 9.5, <http://indiabudget.nic.in/es2009-10/chapt2010/tab95.pdf>, accessed May, 23, 2016.

Exhibit 13 Electricity Access, Regional Aggregates, 2012

Region	Population without electricity (in millions)	Electrification rate (%)	Urban electrification rate (%)	Rural electrification rate (%)
Africa	622.3	43%	68%	26%
North Africa	1.1	99%	100%	99%
Sub-Saharan Africa	621.2	32%	59%	16%
Developing Asia	620.3	83%	95%	74%
China	2.5	100%	100%	100%
India	303.7	75%	94%	67%
Latin America	23.2	95%	99%	82%
Middle East	17.7	92%	98%	78%
Transition economies & OECD	1.1	100%	100%	100%
WORLD	1284.6	82%	94%	68%

Source: International Energy Agency, World Energy Outlook.

Endnotes

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- ¹⁴ Statista.
- ¹⁵ Statista.
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