



The Benefit of Frugal Innovation in Product Management

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ABSTRACT

Frugal innovation, also known as frugal engineering, is the reduction of the cost, complexity, and production of a product, such as a phone, car, or even low-cost cataract surgeries, so it can be sold to consumers in developing countries. This involves the removal of nonessential features of a product and use of unconventional distribution channels. Frugal innovation matches the basic purpose of an existing first-world product that is engineered from scratch to target resource-constrained consumers in developing markets. Types of frugal innovation include cost innovation, frugal IS innovation, good-enough innovation, Jugaad innovation, and reverse innovation.

Key words: cost innovation, frugal IS innovation, good-enough innovation, Jugaad innovation, reverse innovation

INTRODUCTION

The Benefit of Frugal Innovation in Product Management

Frugal innovation, also known as frugal engineering, is the reduction of the cost, complexity, and production of a product, such as a phone, car, or even low-cost cataract surgeries [1], so it can be sold to consumers in developing countries. This involves the removal of nonessential features of a product and use of unconventional distribution channels. Frugal innovation matches the basic purpose of an existing first-world product that is engineered from scratch to target resource-constrained consumers in developing markets. Types of frugal innovation include cost innovation, frugal IS innovation, good-enough innovation, Jugaad innovation, and reverse innovation.

Frugal Innovation

Frugal innovation is engineered from scratch, specifically for limited resource consumers in emerging markets. Frugal innovation is found predominantly in healthcare, energy, electric and electronics, finance, transport, and Information and Communications Technologies (ICT) [2-3]. This type of innovation fulfills the same basic purpose as an existing product sold in developed countries, but it is engineered using new technology platforms and product architectures, and is offered at a lower price than a comparable premium product.

General Electric's VSCAN illustrates the principles of frugal innovation. In the 1980s, GE's Healthcare division was the primary global provider of traditional ultrasound machines at premium prices. However, when GE attempted to enter the Chinese market, the products were too expensive for China's rural regions. After establishing a local growth team to understand the needs of local markets, GE subsequently replaced the costly custom hardware of ultrasound machines and successfully penetrated the Chinese market selling a newly engineered product at a 15% reduction from a traditional low-end unit [3].

Frugal Information System (IS) Innovation

Frugal IS Innovation is defined as an innovative information system (IS) that is developed and used with minimal resources to meet user needs [4]. Frugal IS Innovation implies two points: (1) Frugal IS Innovations are highly cost effective because minimal resources are used, and are managed in time, low-level resources, and scope; and (2) objectives of the system users are achieved. Whether a system is frugal or not, it has to meet user needs to serve a

purpose. With Frugal IS innovation, a system will have one primary design goal, which is constrained in scope and might exclude secondary goals.

Cost-Engineered Innovation

Cost-engineered innovations are products that are manufactured the same for less, sometimes using improved processes. OEMs now can pursue frugal innovation to produce new forms of medical equipment at a reduced cost [1]. Cost-cutting is fabricated into the initial design process, making cost innovations even cheaper than the cheapest ordinary products. Dr. Sandek, Tilganga Eye Center, has restored vision to multitudes of people in Nepal, Asia, and Africa by offering low-cost cataract surgeries, which cost an average of \$115 as compared to \$3,000 in the West [1], using an inexpensive acrylic lens (intraocular lens) that costs only \$4. However, in the medtech industry in particular, government legislation is needed to institute definitive regulations to safeguard against merely cutting costs at the expense of product quality.

Good-Enough Innovation

This category of innovation includes products, such as a motorbike or phone, which already have a successful sales history in the developed world. The products need to be re-engineered to fit specific use requirements in emerging markets. This involves the removal of non-essential features and a reduction in production costs which would make the product affordable. Mettler Toledo, a Swiss laboratory equipment manufacturer, redesigned its weighing scale for the Chinese market, resulting in a product that had the basic minimum features at a low cost. A combination of low-cost manufacturing materials made this possible [5].

Jugaad Innovation

Innovations often occur during conditions of resource scarcity in which usual solutions are either unavailable or too expensive [6]. In such constrained environments, individuals work with whatever resources they have, using affordable, effective tools, processes and techniques to solve problems [7]. Jugaad is a colloquial Hindi and Punjabi word that means an 'innovative fix', which originated in rural India. The principle of Jugaad is utilized by individuals living under the poverty line in Africa, South America, and other areas. It has resulted from poverty and need, and is practiced on the street, in which entrepreneurs identify needs and find solutions. Jugaad innovations are engineered through creative problem solving by entrepreneurs. The MittiCool Fridge was developed in India and runs without electricity, and came from a need to keep produce fresh after an earthquake. The cost is about \$50, and helps low-income people who have no access to electricity [8].

Reverse Innovation

Reverse innovation is a new concept in which innovations are adopted first in an emerging market and are then spread to developed markets. This is the complete opposite of conventional trickle-down flow of innovation and new technology from developed to emerging economies over time [9-11].

Frugal Innovation in Medical Technology & Healthcare

Most Medical technology is focused on high-income, developed nations, resulting in medical devices, such as diagnostic machines and implantable devices (pacemakers)^[1] that cannot be effectively used in developing nations due to the lack of caregiver skills or training. Also, the harsh environments (heat, dust, rain) in developing countries may not generally be suited to more complicated technology.

CONCLUSION

Frugal innovation has the same purpose as an existing product sold in developed countries, but it is engineered using different technology platforms and product architectures, offered at a lower price than a comparable premium product. The downside is that frugal innovations may forfeit performance compared to a premium product, but will meet the acceptable use requirements of a resource-constrained market.

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