

Connecting User Innovation, Frugal Innovation and Reverse Innovation: Case of Epson's Eco Tank Printer

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Abstract

Inkjet printers enjoy a large market size in the global industry. According to industry reports, their share stood at 70 million units sold (Japan Patent Office, 2014). The number of units sold is declining these years. The main players in this segment are Hewlett Packard (HP), Canon and Epson. Each share of the shipping Value is 42% (HP), 24% (Canon) and 24% (Epson) (Japan Patent Office, 2014).

The main business model of the Inkjet Printer can be described as “Consumables-Business Model”. The companies sell the hardware for prices that are low and sometimes even lower than the incurred manufacturing costs. Manufacturers, thus, generally do not generate profits at the point of sale. In the course of usage, users need to purchase the consumables (i.e. ink) and the manufacturers can make profits selling these consumables at a relatively high price. In short, the price point is kept low but the increased total cost of ownership (TCO) is used as compensation mechanism for the unrealized revenues.

However, in recent years, the consumables-business model has been affected by the entry of (unauthorized) third party companies (for example, Ecorica) in the developing countries. Moreover, this business model has not functioned in emerging economies because of remodeling done by users. Even though the first country, where the remodeling took place, is not known; the main remodeling users were located in China, Indonesia and the Philippines.

There are many patterns of remodeling. Some users make a hole on the genuine cartridge to enable a refill; while some others make a compatible cartridge. The most important pattern of the user remodeling, however, has been the “Continuous Ink Supply System” (CISS). Users make a big ink tank and connect it to the cartridge using tubes. See **Figure 1** for an illustrative example:

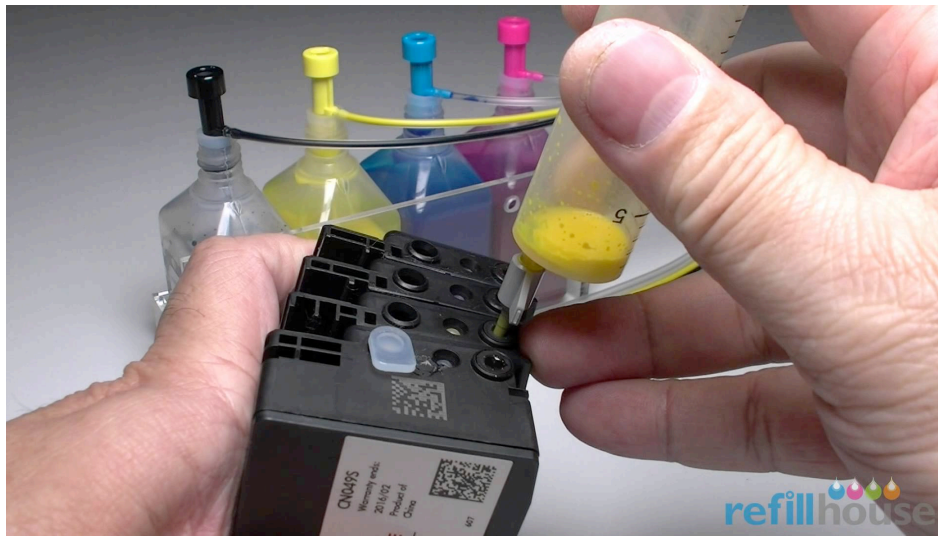


Figure 1: Ink refill by users¹

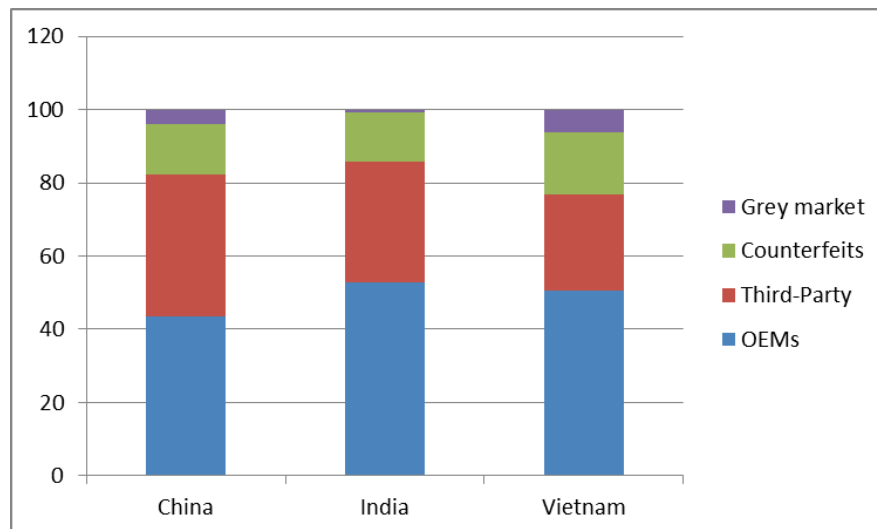


Figure 2: Printer consumables market share by category in 4th Quarter 2014²

¹ Source: <https://i.ytimg.com/vi/2in9og2m3lw/maxresdefault.jpg>, authorized for non-commercial usage as per Google search results

Generally speaking, the ratio of the “genuine” cartridge supplied by original equipment manufacturers (OEMS) in the growing and still-unsaturated markets of emerging economies in Asia has been rather low (**Figure 2**) and has not allowed the consumable-business model to function.

User-remodeling has now motivated Epson to develop a printer which has an official, in-built CISS. The first “Eco Tank Printer” was released in Indonesia in 2010 (Nikkei Sangyo Shinbun, 14/Jan/2016). Epson has changed its business model from the consumable-business model that requires the user to buy the high-priced consumables frequently, to a business model that builds on low TCO and high value for users. The cost of print has declined to 10% compared with the previous inkjet printers. However, the price of the printer hardware is three times as high as previous hardware (Nikkei Shinbun, 27/Apr/2016). The high level of value is generated for the user by getting access to the quality control and product guarantees associated with a genuine OEM product. Here, user Innovation acted as a trigger for frugal Innovation (Tiwari and Herstatt, 2014) on the producer side.

The sales of the Eco Tank Printer reached 5 million units in 2015 (Epson Investors Relations, 2015:2Q). The ratio in the whole printer sales of Epson stood at 35%. The Eco Tank Printer replaced the market share of the previous inkjet printer in Indonesia and Mono-Color Laser Beam Printer in India. Following Epson, other companies have released similar big tank models; Brother in June 2015, Canon in December 2015 and HP in February 2016. Epson has released the Eco Tank Printer in Europe market on 2015, in Japan on 2016. Here, the Frugal Innovation crystalized to the Reverse Innovation. The products which were originally meant for markets in the developing world, are now sold also in the economically-developed world, which connects frugal innovation to the research on “lead markets” (Beise, 2004; Tiwari and Herstatt, 2014) and in a certain sense to reverse innovation (Immelt, Govindarajan and Trimble, 2009; Govindarajan and Ramamurti, 2011).³

² Source: Authors’ illustration based on data from statistica.com, accessed: May 12, 2016

³ Strictly speaking, “reverse innovations” are not just *targeted* at emerging economies; they rather also *take place* there. This is one of the key differences between innovations in lead markets and reverse innovations.

This case shows that the emerging theme of frugal innovation has close connections to user innovations and is in line with von Hippel's assertion (2005: 122 p.):

[T]oday users do have ready access to kits that offer basic electronic and mechanical building blocks at an affordable price, and physical product prototyping is becoming steadily easier as computer-driven 3-D parts printers continue to go up in sophistication while dropping in price. Very excitingly, even today home-built prototypes need not be poorly fashioned items that will fall apart with a touch in the wrong place—the solution components now available to users are often as good as those available to professional designers.

A recent study (Tiwari, Fischer and Kalogerakis, 2016) has identified user innovation as one of the key area of influence on the research on frugal innovation. Since there is reason to believe that user innovation per se have an in-built frugality component, as manifested in a more efficient and effective use of resources, cost-reduction and very good quality (cf. Herstatt and von Hippel, 1992) and since digitalization is creating new possibilities for users to innovation, this connection needs to be better researched. Initial insights and propositions will be generated using this case study from Japan, which shall then mark the future scope of research for the authors of this extended abstract.

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