

Chapter 3

Discontinuous and Disruptive Open innovation Models

The models of open innovation outlines the significance of participation with outer sources, keeping in mind the end goal to enhance the creative abilities of a firm. The focus of our research is on the Morris and Miller model of open discontinuous innovation creating viral values and on Christensen model open disruptive innovations opening low end new markets.

Introduction

As indicated by Freeman (1982) the four procedures embraced by innovation are competitive leadership, fastest follower (defensive), cost minimization (imitation) and specialization in traditional segments to which we can propose to add open innovations which could be achieved by licensing purchase or acquisition of other firms (Granstrand, Bohlin, Oskarsson, & Sjoberg, 1992).

R&D is just one possible input that firms have for innovating, not the only one (Hoffman, Parejo, Bessant & Perren, 1998). R&D has to be managed in a manner that is fully integrated into the strategic management of the business (Dussauge & Ramanantsoa, 1987; Grow & Nath, 1990; Barney, 2001).

In the closed innovation model, all the knowledge that gave the premise to the improvement of R&D was delivered by insiders. Past the "entryway", Allen and Cowen (1969) have distinguished the part of the 'doorkeeper' in a firm, which is accountable for interfacing the inside researchers and researchers outside the firm, a step toward open innovation.

Cooperation and partnership between companies open the way to more efficient R&D toward open innovation (Grow & Nath, 1990; Rothwell, 1991; Tidd et al, 1997). Changes made by firms in connection with innovative assets and R&D considers three imperative elements recognized by Rothwell and Zegveld (1985): the innovation blast; the shortening of the innovation cycle, and the globalization of innovation which are past the inward abilities of the firm.

Open innovation is based on outer wellsprings of innovation (Chesbrough (2003a, 2003b, 2004).

Spearheading firms which did not change their innovation strategy have been surpassed by adherents. For example, the web program, Mosaic (1993) was jumped by Internet Explorer, and the 1994 web index Altavista was overwhelmed by Google in 2000 (Trott and Hartman, 2009).

Discontinuous open innovation

Continuous innovation is identified with the utilization and improvement of innovations definitely known and utilized (Levinthal and March 1993) which enhances products and markets (Tidd et al., 2005).

McDermott and O'Connor (2002) characterize the discontinuous innovation as "the formation of another line of business, both for the firm and for the market", featuring the centrality of an oddity on in excess of one measure as proposed by Miller and Morris (1999).

Scan for discontinuous innovation, centers around the five dimensions of entrepreneurial behavior. The first dimension is innovativeness. For Phillips et al. (2003) SMEs are more effective at discontinuous innovation (Kassiceh et al, 2000). Discontinuous innovations demands from the firm to grow new methodologies and specialized abilities (Reid et al., 2004).

The second dimension is pro-activeness. As Miller (1983) saw it, relies upon the degree in which an association is inventive. Genius liveliness develops when the innovation is more discontinuous, on the grounds that more dangers are included (Miller, 1983). The third dimension, risk-seeking behavior, is of SMEs (Hitt et al., 1991). The smaller the organization, the bigger the risk-taking behavior is.

The fourth dimension is autonomy. Worthy (1950) found that the degree of autonomy is higher in smaller firms, which would suggest that smaller organizations are positively influenced and stimulated by higher level of autonomy.

Competitive aggressiveness is the fifth dimension. According to Lassen et al. (2006) this was the only dimension which did not have a direct positive effect on radical innovation. When searching for discontinuous innovation, an organization is looking for a new market where there are no competitors yet. Competitive aggressiveness is not required.

The fusion (combination) between two technologies to another one, for example, electronic and optic=electro-

optic or composite materials are characterized as discontinuous innovation.

Orbot, established by Kobi Richter, built up an automated optical inspection (AOI) framework to help in the monitoring and control of printed circuit boards (PCB), utilizing propelled optics and electronic calculations distinguishing, and sort absconds, with speed and determination already inconspicuous in the field (petersposting site), an electro-optic fusion innovation.

Kobi Richter sold his shares in Orbot and established Medinol in December 1992. He understood that following the most important thing in heart solution was the stent, a small device made out of wire mesh tube embedded into a conductor to keep it open and enable blood to stream as it should. The stents of the mid-1990s were hazardous—some were excessively unbending and troublesome, making it impossible to embed, while others were excessively adaptable and fell after inclusion. What was required was another sort of stent that would be adaptable amid inclusion and unbending a short time later. Richter built up this new sort of stent, the unbending flex, with the design Grisha Pinchasik, who had as of late moved Russia to Israel, an expert of shape and strength of bodies to the stent the important shape giving adaptability in the addition stage and inflexibility a while later.

NIR is the first depended on Cobalt-chrome amalgam, fusion innovation, and perceived for its novel adaptability, similarity and platform, NIRxcell, the new generation, has a significantly bring down the rate of restenosis (vein re-narrowing) contrasted with contending stents in an ongoing clinical investigation (medinol site).

Developed 50 years back, DuPont™ Kevlar® fiber is a fiber resulting from a fusion innovation of a distinct chemical composition of wholly aromatic polyamides (aramids).

Kevlar® has a remarkable mix of high quality, high modulus, strength and warm soundness. It was developed for requesting mechanical and propelled innovation applications (dupont site). Kevlar fiber gives to tires Sustainability; Alternative Drive; Lightweighting; Improved Performance; Powertrain Efficiency.

Fusion could be between two existing markets, developing another market as discontinuous market innovation. The 3D printer is another item delivering 3D

models or different items. It's a printer and a scanner yet it doesn't print and doesn't check yet deliver 3D objects.

Disruptive open innovation

Disruptive technologies introduce different attributes from the one of mainstream customers. They perform worse along mainstream dimension but they create value for new customer segments seeking for a less costly product (Christensen, 1997; Bower & Christensen, 1995).

Typical characteristics of products based on those technologies are cheaper, simpler, smaller and frequently, more convenient to use at their emergence. The disruptive innovation develops opportunities for low end customers.

Failure in disruptive open innovation

In wireless phones for example, call quality, product size, and weight were salient features in the buying process. Once phones became good enough, and the differentiation between hardware became less distinct, different applications or modules became competitive. A disposable phone for calling or receiving call only, in a specific region, for the bottom of the market could be a disruptive innovation. Nokia is trying to come back with a simple and cheap model, Nokia 3310 (Kelson, 2017).

It is a feature phone rather than a smartphone as it only provides limited internet facilities. It relies on 2.5G connectivity - which has slower data speeds than 3G or 4G. its advantage over more powerful handsets is its battery life with more than 22 hours of talk time.

Modular architectures are more likely to succeed as disruptors when the basis of competition has moved beyond performance to dimensions such as convenience, customization or flexibility.

Dov Moran the inventor of the USB Flash Drive (DiskOnKey), the FlashDisk (DiskOnChip) a discontinuous founded Modu, an innovative company developing a modular phone based on a brain module and several pockets, each one proposing a set of different application, office, music, sport. In one hand it was a disruptive technology in comparison to the current cellphones because each customer segment had the possibility to choose the applications he needs.

In the other hand, the intention was to compete with the global cell phone market by proposing the possibility to "customize" the cell phone differently for each customer segment.

The project failed because not any customer segment was ready to answer positively to such a disruptive innovation. Modu sold the patents to Google in 2011 which where the basis for Google's modular phone project, called project Ara. In September 2016 Google has suspended work of project Ara, the initiative to build a phone with interchangeable modules for various components like cameras and batteries. It was costly to produce according Bob O'Donnell of TECHanalysis Research (Love, 2016 smartphone).

Successful disruptive open innovation

The Scottish-born Alexander Graham Bell and the Italian born Antonio Santi Giuseppe Meucci, both immigrants to the US, developed the telephone as a disruptive innovation of the telegraph (Akcigit et al, 2017). The telephone did not replace the telegraph but developed a market of its own. The telegraph was replaced by another disruptive technology the facsimile developed by the Scottish Alexander Bain. At the long run the telephone and the facsimile became discontinuous and continuous innovation.

Benny Landa established in 1977 Indigo in order to develop a digital offset color printing for small clump applications competing with the traditional offset printing. In 1993 the E-Print 1000 which wiped out the cost and labour of the plate-printing setup process, printing specifically from a PC record, and empowered short-run shading printing at a lower cost than offset traditional printing but with a lower quality, a disruptive innovation.

In 2002, Indigo was acquired by Hewlett-Packard (HP) Company which transformed it a discontinuous innovation for a new short run printing market developed by HP.

Steven Sasson, an Electrical Engineer working at Kodak itself developed the computerized camera in 1975, which began the disruptive digital innovation (Krin, 2011).

The model utilized Digital tape which took 23 seconds to record the tape which is made to hold 30 pictures (Deutsch, 2008). The administration was not prepared for it (Knowledge Wharton, 2012).

The innovation of the computerized cameras brings numerous new players entering the photographic market from the purchaser electrics field and the computing field, notwithstanding those changing from the film-based period (Benner and Tripsas, 2010).

Digital disruptive innovation began a parallel market to analog camera market led by Kodak with a more costly advanced camera proposing lower quality, however, more pictures and plausibility to erase pictures (disturb development site). Kodak administration was neither visionary to lead this new market toward maturity.

Casio propelled the QV-10 an easy to use and reasonably digital camera which could be utilized by the undernably PC-clever clients in Japan and the US. Notwithstanding utilizing its scaling down and mass-assembling aptitude to accomplish smaller weight and cost cutting. Its designers included a 1.8-inch dynamic framework LCD Throughout the following couple of years, the CCD resolutions quickly enhanced, from 0.3 megapixels to more than 2 megapixels. The capacity was