

## **Wisdom of Firms versus Wisdom of Crowds**

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### **Abstract**

*As firms desire to stay competitive, many of them have recently opened their innovation to tap into external sources (mostly consumers) and to export ideas for the sake of raise in profits and talents. For this purpose, several open innovation models with impressive success stories have emerged. On the other hand, as open innovation promise benefits, the tools of open innovation are destructive if they are not also used to support internal sources as industrial design and overall strategic goal. This study aim to provide first, a critical review of the rudiments on open innovation models (connect & develop, co-creating value, global brain and crowdsourcing). Second, the main features of these models and their mechanism are compared with their similarities and differences. The paper ends with a discussion of the position of conventional industrial design practice in open innovation models and their possible side effects.*

**Keywords:** Open Innovation, Crowdsourcing, Global Brain, Co-Creative Value, Connect & Develop, Industrial Design.

### **1. Introduction**

The dilemma between the benefits of internal versus external resources is still a hot topic of innovation studies. The organizations cannot rely solely on internal sourcing but also need knowledge from beyond their boundaries (Rigby and Zook, 2002). They contract and transfer work to lower-cost providers to develop innovations (Hutson and Sakkab, 2006). This process is generally known as outsourcing and has notable practices and exemplar cases. Since, the popularization of the Information Technology (IT), the mechanism of classical outsourcing has changed and has become even easier. Outsourcing firms has become capable to reach not only outside consultants but the consumers to share, combine and renew each other's unique experiences.

Present-day innovation models those seek product ideas outside the firm, by IT, has been studied by various researchers (Prahalad and Ramaswary, 2004; Prahalad and Khrisnan, 2008; Chesbrough, 2006; Howe, 2006; Hutson and Sakkab, 2006; Nambisan and Sawhney, 2007). Each model stress the importance of collective and distributed intelligence that embedded in the crowd and offer different paths to access distributed genius beyond the boundaries of to find solutions to industrial problems. The essential purpose of this act is to work in a collaborative manner to create value for consumers.

Open innovation is not a new concept however increased in recent years (Chesbrough and Garman, 2009) and its importance seems to increase further (Spithoven et al., 2010). On the other hand, many firms stay away open innovation because of its potential risks (Rivette and Kline, 2000) and unfamiliar process. Besides, open innovation trend entails notable risks for traditionally established businesses like industrial design because of the unfair competition both in internal and external activities and fear of diminishing the design profession.

It is therefore the aim of this paper to examine existing open innovation models and to focus its potential risks to design business. On these grounds the paper is organized as follows: First the rudiments of value creation are set out in Section II. The brief antecedent and current literature about open innovation models is elaborated in Section III. Comparison and discussion of their commonalities and dissimilarities is made in Section IV. The final section provides raising concerns about models potential negative effects.

### **2. About Value Creation**

Basically "...value can be regarded as a trade-off between multiple benefits and sacrifices" (Walter et al., 2001, p 366).

In traditional way, it can be created entirely inside the organization and transferred to customers in marketplace or co-created by the firm and the customer together (Prahalad and Krishnan, 2008). Schumpeter (1943) states value can be created by technological change and innovation in form of new goods or new production methods, the new markets, sources and reorganization of industries (Schumpeter, 1943). In 1985, Porter analyzed value creation at the firm level by his famous value chain idea (Porter, 1985). Value chain analysis explores the activities of the firm (primary and support) and identifies their economical reflections. Value change is created by policy changes in every internal step in value chain.

However, in fast-changing competitive environment, Porter type value creation is changing too. Chain based value adding activities has transformed in collaborative manner and the companies' means more than a link on the value chain and has become a center for "... customers to create their own value from the company's various offerings" (Norman and Ramirez, 1993, p 5). So the secret of value creation is no longer found in a fixed set of activities along a value chain, but found in emerging complex business systems that enclose enthusiastic actors ready to share their specialized expertise and experiences that accumulated over time.

### **3. Models in Brief**

In this part, new learning and network collaboration paradigms will be introduced in epitome. Researchers have developed several models and frameworks of network-based innovation in the last decades.

For instance, Hutson and Sakkab (2006) describe an open innovation model which is called "Connect & Develop". According to authors, internal R&D "[is] not capable of sustaining high levels of growth [so the firms] should move from a centralized to a globally networked internal model" (Hutson and Sakkab, 2006, p 3). The model aims to connect external sources of new ideas and "...develop those ideas into profitable new or refined products" (Hutson and Sakkab, 2006, p 1). Model differs from classical outsourcing yet it is about "... finding good ideas and bringing them in to enhance and capitalize on internal capabilities" (Hutson and Sakkab, 2006, p 4). In practice, the model first surveillance to three environments to define consumer needs, to identify adjacencies and "... technology game boards to evaluate how technological acquisition move in one area might affect products in other categories" (Hutson and Sakkab, 2006, p 5). Second, the model uses several core networks (proprietary and open) to seek out new ideas. Last the ideas are screened internally to identify potentials. Similarly, Prahalad and Ramaswary proposed a model of co-creating value with customers (Prahalad and Ramaswary, 2004). The model suggests a new frame of reference for value creation; customers. Authors highlight the new role of customers in the industrial system that changed from isolated to connected, from unaware to informed, from passive to active. This provokes consumers to seek to exercise their influence to interact in every part of the business (Prahalad and Ramaswary, 2004). Therefore, "... consumers engage in the process of both defining and creating value [and they become] very bases of value" (Prahalad and Ramaswary, 2004, p 5).

The co-creating value basically offers the DART (Dialogue, Access, Risk Assessment, and Transparency) model which consists of several key building blocks. Dialogue "... implies shared learning and communication between two equal problem solvers (consumer and industry itself)" (Prahalad and Ramaswary, 2004, p 7). Access, on the other hand, eases customer to reach desirable experiences even they have no ownership. Risk assessment supposes "that if consumers become co-creators of value with companies, then they will demand more information about potential risks of goods and services; but they may also bear more responsibility for dealing with those risks" (Prahalad and Ramaswary, 2004, p 7). And last transparency ensures consumers to reach firm information to create trust between the two parties.

"Open Innovation", a model created by Chesbrough (2004), assumes that the "...external sources of knowledge become more prominent, while external channels to market also offer greater promise" (Chesbrough, 2004, p 23) According to Chesbrough, traditional self-reliance on vertically integrated innovation is disappeared so "this is not to argue that all industries have been (or will be) migration to open innovation" and boundary between a firms and their surrounding environment is becoming more porous to enable innovation to make easily between two (Chesbrough, 2003). As the useful knowledge widespread, open innovation focus on "the use of purposive inflows and outflows of knowledge to accelerate the internal innovation, and expend markets for external use of innovation, respectively" (Chesbrough, 2006). The major difference between traditional closed and open innovation lies how firms screen their ideas.

Another model, Global Brain, is introduced by Nambisan and Sawhney in 2007. The model describe global brain as the diverse set of external players (that may be "...customers, partners, suppliers, amateur inventors, academic researchers, scientists, innovation brokers and a host of other external entities) that constitute" the innovation network for the companies (Nambisan and Sawhney, 2007, p 1). According to the model, as "...the vast creative potential lies beyond the boundaries of the firm" (Nambisan and Sawhney, 2007, p 1) and there is no single best method to obtain valuable ideas, numerous useful approaches –each with different attributes and benefits – are emerged in the global network of innovation. Nambisan and Sawhney proposed four basic network models depending on external market context and internal capabilities. "The Orchestra Model" has an innovation space which is fairly well-defined and a centralized dominant firm has a network leadership. "The Creative Bazaar" has a much more emergent innovation space but still involves a dominant firm shopping new ideas, products, and technologies to make them market-ready. "The Jam Central" has an emergent innovation space without a dominant firm. It is in a community form that contributors come together to collaborate in envisioning and developing an innovation. The last, "The Mod Central" has a well-defined innovation space that governed by a community. In the mod central the activities are focused to add, improve, or adapt existing products or services and innovation actually belongs to the community.

The last model, Crowdsourcing, has coined by Jeff Howe and Mark Robinson. The term is officially defined as "the act of a company or institution taking a function once performed by employees and outsourcing it to an undefined [and generally large] network of people in the form of an open call" (Howe, 2006). This online, distributed problem-solving and production model highly depends on crowds and emerging IT and "under the right circumstances, groups are remarkably intelligent, and are often smarter than the smartest people in them" (Surowiecki, 2004). Crowdsourcing is in the form of open-call where crowd is paid for their efforts. In other words, "a company posts a problem online, a vast number of individuals offer solutions to the problem, the winning ideas are awarded some form of a bounty, and the company mass-produces the idea for its own gain."(Brabham, 2008, p 76).

#### **4. Models in Common**

There are several issues that every network-based innovation models emphasis in common. First issue is the network itself.

##### **4.1 Web 2.0**

With emerge of Web 2.0 in 2004, innovation faced with persistent and quite amazing phenomenon. Web 2.0, which refers to means and tools for interactive communication, has enable users to create user generated content and the passive browsers of the network has become network itself. This enormous improvement has provided the transformation of individual knowledge to shared information without limit of geography and cultural background. The independent and decentralized nature of Web 2.0 has yield a real-time and interaction based open system of diversity of thoughts.

Today the business world is undergoing a significant transformation by the help of potential benefits of Web 2.0. The cost saving potential of Web 2.0 has discovered by many firms and it has become a basic medium for innovation attempts because of transaction costs. Adoption of Web 2.0 inside the workplace allowed firms to reach inconceivable numbers of participants ready to share individual knowledge.

##### **4.2 Active Consumer**

According Prahalad and Ramaswamy, consumers are challenging the corporate logic behind value creation (Prahalad and Ramaswamy, 2004). Today, active consumers are able to influence value creation. Value creation by consumers can be in two form; "... one that breeds new content to the product and another that supplies ideas for new product versions or genuinely new products" (Jeppesen and Molin, 2003, p 364).

Traditional strategy on positioning the company in the right place on the value chain can no longer survive. On the contrary, companies do not just add value and pass them downstream to the next actor in the chain; they work with different economic actors to co-produce value by reconfiguration of roles and relationships among to improve fit between competencies and customers (Norman and Ramirez, 1993).

### 4.3 Wisdom of Crowds

According to Surowiecki, under the right conditions (Diversity, independence, decentralization and aggregation), a diverse collection of independently deciding individuals is likely make certain types of decisions and predictions better than individuals or even experts (Surowiecky, 2004). At the same time, crowds have internal filter mechanism to filter the various ideas coming from crowds (Howe, 2006). Another metaphor used for collective intelligence is Global Brain (Russell, 1982), which is an intelligent and self-organized network formed by the people where the knowledge and communication technologies that connect them to create a massive collective innovative force (Tapscott and Williams, 2006; Nambisan and Sawhney, 2007).

### 5. Gaps Between Models

The differences between models are fairly little. From a quick look at the progress of each, an observer would notice differences in type of collaboration. As IT has dramatically reduced the cost of accessing “Global Brain”, potential partners and ways to collaborate with them have both expanded enormously in number (Pisano and Verganti, 2008). This has made the perennial management challenge of selecting the best choices much more difficult.

The cost of searching for, screening, and selecting contributors has yield four basic modes of collaboration, each characterized by distinct trade-offs (Pisano and Verganti, 2008). The structure of participation (Open or Close) and form of governance (Hierarchical or Flat) reveals the modes of collaboration. Each combination has advantages and challenges of the different approaches to collaboration, and examples of capabilities, assets, processes, and kinds of problems that make each easier to carry out (Pisano and Verganti, 2008).

For instance, Connect & Develop Model cultivates both proprietary and open networks whose members may have promising ideas. Proprietary networks, which developed specifically to ease connect-and-develop activities, include suppliers (technology entrepreneurs) with six connect-and-develop hubs all around world, who collectively have 50,000 R&D staff. These networks are created a secure IT platform to share problem briefs with these suppliers—who can’t see others’ responses to briefs (Hutson and Sakkab, 2006). On the other hand, open networks (for example. NineSigma, InnoCentive, YourEncore and Yet2.com) connect “...interested corporations with universities, government and private labs, and consultants that can develop solutions to science and technology problems.” Hutson and Sakkab, 2006, p 1)

Co-creating Model focuses customer as a co-creator of value and offers an engage in dialog with suppliers during each stage of product design and product delivery. The evolution and transformation of customers from “passive audiences” to “active players” (Prahalad and Ramaswamy, 2000) is supported by DART Analysis based on reciprocity interconnected set of processes. The Dialogue part of DART Analysis is a bit blur however, model focus locus of interaction not once at the value chain but repeatedly, anywhere and anytime of the system (Prahalad and Ramaswamy, 2004). Firm and consumer relationship based onset of interactions and transactions focused on a series of co-creation experiences on an active pattern, initiated either by firm or consumer, one-on-one or one-to-many.

Global Brain Model has more focused on form of governance of network. The network-centric framework is based on two dimensions. The first dimension considers the nature of the innovation space (defined or emergent) whereas other defines network whether it is community-oriented or democratic type (Nambisan and Sawhney, 2007). Based on those two dimensions, firms can play either dominant or intermediary roles.

Crowdsourcing taps more into the global world of ideas through an open call. Problems are broadcast to crowds mostly by Web 2.0 applications and crowds submit various solutions. The solutions are also filtered by crowds and occasionally bests ones are rewarded. Crowdsourcing is rather networked through web technologies and firm driven. Thus, the best ideas used for firms own gain. Yet the free distribution of the final product is limited, crowdsourcing does not mean open source (Brabham, 2008).

Another difference in models is the reward system. As the open innovation solutions are owned in the end by the any firm posting the call for solutions to its problem, “[they] have a monetary value relative to the potential to maximize profits from the solution” (Brabham, 2008, p 83). Most of the collaboration has a structured reward system either monetarily or with prizes, sometimes labor is compensated with respect in community and satisfaction.

According to Huberman and et al, attention status and recognition are such a valued resources and very important motivators that people are often willing to forsake financial gain to obtain it (Huberman and et al.,2009).

## **6. Where is Industrial Design?**

As network-based innovation becomes more prevalent, there may also be positive and negative side effects for design profession. Although current approaches on collaborative innovation posit that innovation is triggered largely by network centric practice and there is a broad and growing consensus among the critical role of it, a satisfactory analysis about its effects on design profession is still missing. On the other hand, several questions arise from the theory of design management and especially industrial design perspective. Does network based innovation attempts enrich or demise design profession? Will professional designers engage in new innovation conditions to benefit or totally refuse?

With access to unprecedented amount of information on firms, product, technologies and related utilities, ordinary consumers has become capable to use Internet and even develop products (Prahalad and Ramaswary, 2004). According to Howe, CAD programs and other professional tools are becoming easier and reachable than ever and it will be as easy for an amateur product designer to go up against the professionals (Howe, 2006). This has yield regular consumer to exercise their influence on product design issues with specified web sites settled to harvest end users huge creative potential. While the problem between uses of active consumers rather than design professionals increasing, the future of the established design industry is becoming cloudy for expansion.

Many authors assume one of the advantages that open innovation models provide over, say, the much-reduced cost if the same activities were carried in-house. As it is claimed, it is due to the afforded flexibility of network technologies that allow tasks that were previously infeasible. Instead of looking inside or establishing networks, many firms use commercial networks for cost saving purposes to broadcast problems and collect solutions. In this way, problems can be rapidly solved at rather little cost with relatively below-market wages. Thus, with the rationale of cost saving nature of the open innovation, the employer may offer candidate designers below market wages, or may cut permanent designer wages below market wages or prefer to hire permanent staff as contractor when necessary. Under these circumstances, permanent employees who believe they are paid unfairly due to open innovation condition, may reduce performance or resign in the name of fairness (Akerlof and Yellen, 1990).

According to Verganti, as consumers are "... immersed in today's socio-cultural context" which shapes "... their interpretations toward current meanings [they can] hardly help in understanding possible radical changes in product meanings" (Verganti, 2008, p 442). Therefore, "... asking users about their needs or observing them as they use existing products and tracking their behavior in consumption processes" will embarrass the proposal of radical innovation of a product's meaning (Verganti, 2008, p 437). If "...customers hardly help in anticipating possible radical changes in product meanings" (Verganti, 2008, p 438), how will open innovation succeed to create radical changes in meanings? Though some critics, despite "each consumer's uniqueness affect the creation process as well as the co-creation experience" (Prahalad and Ramaswary, 2004, p 5), there may increased sameness that a crowdsourc (ed) project will fail because of shared same socio-cultural context. Possible solution can be a mediator institution, group of experts, to act as bridges between crowd solutions and "... industries and therefore facilitate the transfer of knowledge on meanings and languages among different contexts" (Verganti, 2008, p 451). So as an experts, "... designers [will] exploit their network position to move languages [and the meaning and values attached by people] across industries and socio-cultural worlds" (Verganti, 2008, p 451).

## **7. Conclusion**

The conventional value creating process has dramatically changed by recognizing the new roles of consumers in the industrial system. Advances in IT allowed firms to open up their innovation processes to the environment in many ways. Several models exist to explain the mechanism and the benefits of open innovation as introduced, however additional studies that point out negative side effects is still fairly limited. In all of these examples, besides its benefits, open innovation threats conventional design practice in several ways. First, armed with new and accessible tools, every active consumer holds a right to become a designer, ready to share ideas and efforts with below or even without market wages. This means that the actions of amateur designers can actively harm the position of professionals about their ability to compete on equal and fair terms. Second, in some critiques, consumers are seen disqualified in identifying future product meanings for radical innovation.

Therefore, large amount of pretty similar proposals can be submitted reflecting current trends under the influence of same socio-cultural context. Therefore, a group of experts may be used first to filter proposals second to interpret and convert ideas coherently to expected future product meanings. So, as open innovation promise a revolution in business and there is several way of doing, it is success will be determined by next few years.

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