



Case study

Deploying information technologies for organizational innovation: Lessons from case studies

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ABSTRACT

Organizations must innovate if they are to survive in today's fiercely competitive marketplace. In this paper, we explore how leading organizations are using emerging technologies to enable novel forms of ideation that can radically increase the sheer volume of ideas they explore. In addition, we outline how organizations use technologies to cost effectively manage this increased volume of ideas by optimizing generation, mobilization, advocacy and screening, experimentation, commercialization, and even the diffusion and implementation of ideas. Critical to this is the management of knowledge during the innovation process.

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1. Introduction

Organizations must innovate if they are to survive and compete (Chesbrough, 2003; Desouza et al., 2009; Drucker, 1986; Porter, 1990). The ability to innovate, and do so smartly (i.e. effectively and efficiently), is a critical competency that firms have yet to master (Jaruzelski & Dehoff, 2010; Pohle & Chapman, 2006). Consider the case of Google who until recently was a poster child for the most innovative organization. Recently, Google has also fallen on bad times in terms of their ability to innovate successfully. Google labs is a genius way to test innovative ideas and prototypes before their release despite its use, Google's recent products have not fared well in the marketplace, for e.g. Wave, Buzz, etc. (Cain, 2010; Lakhani, 2010; Pogue, 2010). So if even the most innovative companies fail, there is still a lot to be learned in term of mastering the innovation process.

The success of an organization's ability to innovate is directly linked to their ability to leverage ideas and to manage knowledge, within and across, its midst. Desouza et al. (2009) outline a process for innovation based on a study of over 30 global organizations that traces the evolution of ideas from *generation and mobilization*, to how they are *advocated and screened for*, and then how are they *experimented with*, following this *commercialization, diffusion and their implementation* in the marketplace. Ideas are

information elements. Ideas are represented as information elements either in textual, aural, or visual formats. Ideas are generated and shared through explicit artifacts (e.g. documents) or tacitly (e.g. through demonstrations). The advocacy and screening of ideas are also information laden – information is shared about the idea and debated leading up to decisions. Moreover, when we experiment with ideas we are gathering, analyzing, and synthesizing data about an idea so as to refine it (or abandon it). If an idea makes it through the experimentation process we can begin the commercialization process, and then diffuse and implement the idea in the marketplace as a product or service. During each of these stages, again, we see the criticality of being able to manage information and knowledge. Consider what might happen if an organization were not able to manage information and knowledge during the implementation and diffusion of a new product/service. Most recently, another poster child of innovation, Apple, faced this very challenge when launching the iPhone 4. During the diffusion and implementation of the product in the marketplace, customers realized that the phone would drop calls due to an issue with the antenna. Apple made one of the rare mistakes in their PR activities as Steve Jobs suggested that users just use cases or avoid holding the phone in a particular way (Sample, 2010). Although Apple is using its brand power to move the fiasco to their benefit by even improving sales of accessories that could help displace this problem (Satariano, 2010), it is clear that this hurts both their sales and image as this issue further delayed the white iPhone 4 launch for antenna redesign (Tofel, 2010). Today, organizations are infusing a wide array of information technologies into their innovation processes (Awazu et al., 2009; Noel, 2009). Information technologies offer great promise for the

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Table 1
Ideation types.

Domain	Activity	
	Reactive follower	Proactive challenger
Inside domain (concrete ideas)	I. <i>Inner follower</i> Follow experts, media and organizations from domain	III. <i>Inner challenger</i> Challenges inside the domain Swarovski, Shell
Outside domain (abstract ideas such as concepts, and models)	II. <i>Outer follower</i> Follow generic topics and authors focus on innovation	IV. <i>Outer challenger</i> Challenges outside the domain Netflix, Procter and Gamble

optimal management of ideas and the enablement of new forms of ideation and idea management. Companies like Starbucks, Cisco, Dell and IBM already rely on these new ideation types. For example, Web 2.0 technologies open up opportunities for users and companies to create more content online, to share this more easily with others on Twitter, Facebook, blogs etc. Technologies like semantic search and social intelligence can help companies to spot trends and identify and analyze job-to-be done. NetBases technology for example discovered that long-distance bikers and other endurance athletes purposely drink Coke that had gone flat – giving them the caffeine and sugar to boost stamina but none of the carbonation, which lead to cramps (Flinn, 2010).

However, technology is no panacea, and needs to be managed appropriately for business value realization. Opening up innovation process to new mechanisms for ideation based on technologies can lead to a new set of problems. As Cisco discovered “the evaluation process was far more labor-intensive than we’d anticipated; significant investments of time, energy, patience, and imagination are required to discern the gems hidden within rough stones. Anyone attempting to do innovation on the cheap should look elsewhere” (Jouret, 2009). British Petroleum (BP) also used crowd sourcing to get ideas to find Deepwater Horizon Oil Spill Solutions. More than 35,000 suggestions were collected by BP and more suggestions are submitted every day! (Evans, 2010). At this stage, it is not clear how BP used and leveraged all these ideas, but through various articles on the Web we could feel a sense of frustration of the people and companies which contributed ideas regarding the slow or lack of responsiveness. Due to the level of emergency, and the inability for BP to handle in a short manner such a large amount of ideas, numerous organizations and groups created their own way to collect ideas and to test and to implement them on their own (IBM, 2010). As for Cisco, too many ideas can be overwhelming and mechanisms need to be developed to rapidly identify the ideas with the most potentials. As Stata, chairman of Analog Devices puts “The limits of innovation. . . have nothing to do with creativity and nothing to do with technology. They have everything to do with management capability” (Govindarajan & Trimble, 2010). The annual Boston Consulting Group survey on innovation revealed that the top 3 main obstacles of innovation were; Risk adverse culture, Lengthy development time and Difficulty selecting the right ideas to commercialize (Andrew, Manget, Michael, Taylor, & Zablit, 2010). “Speed and discipline are companies’ greatest challenges” The bottom-line being that technology needs to be deployed *smartly* to enable for selecting and leveraging ideas within the organization.

A global CIO survey conducted by Capgemini (2008) focusing on the role of the IT function in business innovation reinforced the need for CIO to take an active role in the business innovation process, even though their role at the time was not perceived as being key. The fast emergence of the use of Web 2.0 technologies to support the innovation process (Rivière & Tuggle, 2010) will allow CIOs to play an important role in providing the right IT infrastructure that will enable efficient and agile innovation processes. In this case-study paper, we explore how emerging technologies are enabling leading organizations to manage *ideas* as they move from conceptualization, to commercialization, and finally implementation and

diffusion in the marketplace. The goal of the paper is to outline the potential of information technologies for organizational innovation agendas. The case studies we present below are based on both primary and secondary data collection. Primary data collection included interviews, observations, and even consulting with organizations on infusing technologies into the innovation process. We also conducted an exhaustive search of the business practitioner literature to find examples of technology deployments for innovation. We then, followed up, when possible, to get further information on the details of their technology deployment for innovation.

2. Ideation across the innovation process

Ideas can come from different sources both inside and outside the company. IBM (2006), in their Global CEO study revealed that for the companies surveyed (765) the top 3 most significant source of business ideas came from employees (42%) followed by business partners (36%) and by customers (35%). While a lot is already known about idea sources inside a company, sources outside the company are less researched. Ideas coming out of these sources are still frequently seen as strike of luck rather than systematic management. But as one of the most known examples of “accidental” innovation – the Penicillin case – the discovery was not a result of a pure luck. Although Fleming did not actively search for antibiotics, the connections still had to be made – he needed knowledge to transform an accident to an idea that he stumbled upon (Ho, 1999). Distinct idea sources result in different ideation types that lead to distinct ideation types and demand different approaches to management of these ideas throughout the innovation process (Table 1).

Approaches to ideas generation can be distinguished using two dimensions (domain and activity). The first dimension, Activity, distinguishes among two types of research activity: reactive follower and proactive challenger. The domain dimension tries to exploit the existing paths of knowledge transfer and use this as an idea source. It does not mean that it is not innovative, but crucial thing is to identify the right innovations when you see it. This type is reactive. The latter – proactive challenger – is proactively asking for development of new innovations. These challenges can be very narrowly defined or put broadly with least defined boundaries. Usually companies use time limits when they create challenges. The domain dimension distinguishes ideas inside from those outside the domain company is currently dealing with. Usually companies have deep knowledge and understanding about the domain in which they operate but they only have broad overview of knowledge outside their knowledge domain. Based on these two dimensions four distinctive ideation types are formed: inner follower, outer follower, inner challenger and outer challenger.

Outer follower: companies can learn from other companies even if they are unrelated to their industry. Google and P&G even go so far to swap employees to gain from one another (Byron, 2008). Mr. Garing, CIO and director of strategic planning for the Defense Information Systems Agency visits companies such as Salesforce.com, Google, UPS, FedEx, CitiGroup, Travelocity, Amazon.com to get ideas (Worthen, 2008). But although this approach can be very insightful it is also very resource consuming, rarely pos-

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