CHANGING BOUNDARIES: TOWARDS A MULTIDISCIPLINARY APPROACH TO USER INNOVATION, CUSTOMER FEEDBACK AND ORGANIZATIONAL LEARNING

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Introduction

While innovation has been the core theme what with firms seeking to progress and compete effectively, researchers and academicians for their part have typically studied it from the perspective of the firm. So, literature has focused on innovations originating from the firms themselves. Here a plethora of inter-related topics have been studied. Witness partnership roles which lead to firms becoming more innovative (Zhang, Shu, Jiang, Xu, & Alan J, 2010), the positive effects of collaboration on the innovative behaviour of firms (Sawang & Matthews, 2010), internal characteristics of firms who manage innovation (Waal, Anton, Maritz, Alex, Shieh & Chich, 2010), identifying and exploiting a larger number of knowledge sources for successful innovation (Leiponen & Helfat, 2010) and the moderating role of innovation in the firms' performance linked to corporate social performance (Hull & Rothenberg, 2008). In a similar vein, the impact of innovation on a firm's performance has also attracted a large set of researchers. In this area, studies have typically focused on the impact of innovation on a firm's value and risk (Sorescu & Spanjol, 2008), the study of knowledge, innovation and their impact on firm performance (Thornill, 2006; Darroch, 2005; Loof & Heshmati, 2002) and the impact of dynamic capabilities on a firm's performance in terms of process innovations (Zott, 2003).

From the perspective of customers or users, the impact of innovation has been researched in detail. We come across a wide range of topics here; the customer's experience and delight with the innovative product (Prahalad & Ramaswamy, 2003),

a structured and process oriented management of customer-centric innovation (Selden & MacMillan, 2006), and customer experience as an important dimension of a company's innovation efforts (Sawhney, Wolcott & Arroniz, 2006).

Another important field of study in innovation has to do with the inquisitive, exploratory nature of users who further take upon themselves the role of the innovator and seek to modify or customize the product according to their requirements. In this area, research has traditionally focused on the high technology products where the customer involvement levels are considerably higher. Predominantly, research in this area has addressed issues such as leveraging customer experiences and feedback into innovation (Ulwick, 2002), the critical role of innovation in conjunction with symbolic interactions and customer relationships (Flint, 2006), customer orientation in the development of innovative products (Salomo, Steinhoff and Trommsdorff, 2003) and the dynamic role of the virtual community of users in innovation models (Nambisan, 2002). Besides, customers who don the mantle of innovators have been studied extensively by Hippel (1982). In his stream of research, dominant themes range from identifying successful industrial products through involvement of customer ideas (Hippel, 1978), and studying lead users as the unit of analysis to generating novel product ideas (Hippel, 1986), identifying governmental and regulatory support mechanisms by actively propagating the role of private collectives (Hippel & Krogh, 2006) and studying open source software as the evolving form of innovation models (Hippel & Lakhani, 2003).

We draw our insights from the field of user innovation. In particular, we want to highlight the potentially enormous implications of user innovations for the functional disciplines of marketing and organizational science. With this in mind, we proceed to understand how user innovation, which has predominantly been addressed in innovation literature, has subtle linkages with customer feedback process from the marketing literature and organizational learning which is an area of research and practice in organization science literature. Our humble attempt is aimed at integrating the various common points encountered in these three major streams of research and identifying a model that can help firms to develop stronger focus on innovation.

We have structured the paper into four sections. The first section deals with the development of a strong foundation in understanding the concepts of user innovation. The second section draws insights from marketing literature, yet the focus is on understanding the customer feedback process. The third section focuses on organizational learning, where we try and understand the perspective of single loop learning and double loop learning viewed through the lens of user innovation. The fourth and last section deals with generating an integrated framework that can help firms to programme innovation as a basic function within the boundaries of the organization. In this section, we also propose future research directions that could assist practitioners and academicians who are involved in a dialogue with this field of inquiry. This would be chiefly targeted at providing a multi-dimensional perspective on the emerging field.

User Innovation: Towards A Deeper Understanding

It would be worthwhile to understand some of the works of Eric Von Hippel in this field. Among his early works, Hippel (1978) attempted to change the focus to a Customer-Active-Paradigm (CAP) as opposed to the Manufacturer Active Paradigm (MAP). This brought the focus of innovation to the customer. In his studies of 3M, (Hippel, Thomke & Sonnack, 1999) the example of 3M was used to highlight how innovative character can be built into a firm's processes and structures.

The other stream of research within user innovation turned the spotlight on the lead user as the prime subject for diffusion of innovation. In addition, lead users were actively solicited by firms in the development of new products. As lead users were identified as visionaries who could foresee potentially critical products ahead of their time, firms developed processes to engage them in the innovation practice. In this realm, Hippel (1986) discussed how lead users could be tapped to generate insights for innovative products. The concept is applicable to industrial products (Urban & Hippel, 1988), in terms of developing an understanding of product failures in a high technology environment (Douthwaite, Keating and Park, 2001), testing the theory of lead-users with the objective of developing commercially viable new

products (Franke, Hippel & Schreier, 2005) and developing an assessment of these lead users such as could lead to newer products for the firm (Lilian, et al., 2002).

While firms intend to capitalize on the innovativeness of the users, the context is important. So we need to have a brief overview of the kind of industries or products where such research could be applicable. In this regard, we may try and identify some research studies and their environments – the case of the users of OPAC, an online library search software has the theme of study in Morrison, Roberts and Hippel (2000), the identification of the needs of the user community of mountain biking (Luthje, Herstatt and Hippel, 2006), sharing the user innovation practices with the manufacturers in a high technology intensive environment (de Jong and Hippel, 2009), obtaining rare, yet interesting insights on customer innovation from the extreme sport of kite-surfing (Franke, et al., 2005) and the impact of local, critical information on the technology-heavy integrated chip manufacturing industry (Hippel, 1998)

By now, we have a bird's-eye view of the work in this field. The research has typically been present in high technology intensive industries where the users or customers tend to be highly involved and articulate and the larger applications could be simply stated as conforming to the realm of management of technology. Other characteristics feature the role of the lead-user in the innovation process, the diffusion of open source software due to the zeal shown by the user community and the inter-connectedness of functional disciplines that arise due to research which spans across firm boundaries and silos within the firm. What is interesting as we build up our three-stage argument is that in all these research areas there is less information on the process that is used to capture the information about customer-defined innovation. Whether there is a formal process or whether there is a "over-a-cup-of-tea" atmosphere in which some knowledge is transferred to the firms is a question that has not been addressed by academicians studying this field.

Customer Feedback Process: Insights from Marketing Discipline

The phenomenon is not new. It has been prevalent since time immemorial. This involves understanding a customer's views and opinion after the product or service has been consumed. The process can also be targeted at a potential customer of a new product which is yet to be launched, in which case, it can be taken as a test marketing case or a dip stick survey intended to gauge consumer responses.

However, before proceeding further, let us also take an overview of insights from literature. Customer feedback or the feedback loop has usually addressed a diverse range of subjects such as benchmarking using the customer feedback information to identify and plug performance gaps (Zairi, 1992), classification of customer feedback information using computational linguistics – a field which has been of tremendous assistance in the e-commerce industry - (Gamon, 2004), importance of passive feedback mechanisms in understanding classifications of customers (Sampson, 1996), institutionalizing the customer feedback mechanism in such a way that the process is well structured and suited to enable greater organizational learning (Wirtz and Tomlin, 2000) and viewing the customer feedback or complaint system as a complement which could be converted into a strategic tool (Barlow and Moller, 1996).

In the marketing discipline, there have been concerted efforts to identify if customer feedback can be positioned to generate insights that could drive firm performance (Morgan and Rego, 2006), using customer satisfaction measurements through a simple process to predict growth potential of firms (Reichheld, 2003), affixing a brand value through customer ratings on brand attributes (Lassar, Mittal and Sharma, 1995), giving due regard to customer equity and incorporating it into the financial reporting formats (Wiesel, Skiera and Villanueva, 2007) and identifying and tracking relationship between customer metrics and the firm's performance (Gupta and Zeithaml, 2006).

Hence, we have literature that essentially argues and discusses the role of the customer feedback mechanism, its various forms, efficacy and efficiency; in addition, we also have literature from the marketing discipline that tries to establish relationships

between customer metrics and firm performance. At an aggregate level, we have research that looks at the process aspects and research which identifies linkages with more short term, yet vital metrics such as financial performance. The only marked difference that we can observe with studies from the innovation discipline is that marketing literature addressing customer feedback also tries to incorporate measures and metrics that relate to assessing firm valuation or firm performance. Now this point could be taken up by researchers in management of technology or innovation as an area of future research. Such directions would ideally be able to predict firm valuation and performance based on certain processes that are adopted to understand and implement vital areas of user innovation.

Organizational Science: Impact of Single & Double Loop Learning

In our third section, we outline some of the common areas of popular research with regard to organizational learning. We take up this topic since it has implications for the iterative mechanism which we have been studying through a literature review across various disciplines. In short, organizational science helps tackle the topic of learning through the use of single loop learning and double loop learning methods. Single loop learning is a reactive method whereby a firm learns through an iterative process. Double loop learning is a proactive process where the organization is able to look far ahead into the future and plan for the right mix of products or services that would enable it to compete effectively. The other point of distinction is that double loop learning can be considered a proactive approach by management to stay one step ahead of the competition.

Academicians keen on understanding the evolution of learning in an organizational context may perceive it to be new insights or knowledge capture (Argyris & Schon, 1978; Hedberg, 1981), adaptation (Chakravarthy, 1982) or change (Dutton & Duncan, 1983). In the context of this paper, the last two points are of interest and relevance. Adaptation and change are elements that can be related to each other. An adaptive attitude could help an organization embrace change. Embracing change is a vital part of the learning process. The fundamental, implicit assumption is that learning could lead to better performance for the organization. Such organizational learning is a point of interest which we cover in the next section.

How does learning occur in an organization? Is there a way to define methods or processes involved? One approach is to look at learning from well established theory: single loop learning, where the organizational actors are encouraged to learn and act without changing the fundamental tenets, goals and activities (Argyris, 1976); the second one, termed as double loop learning expects the members of the organization to question and challenge the established, implicit principles which serve as the foundation. Even the top management in many organizations are apprehensive about changing the so called grounded realities and principles of the organization much as they urgently call for a review in the face of mounting competitive pressures (Argyris, 1982). Besides, any firm faced with pressures of the marketplace needs to be capable of both single loop learning and double loop learning. As an example, we can take the case of Apple. Not only was it necessary to create advances in its i-Mac based on customer feedback (single loop learning), but it was also a fact that a futuristic product such as the i-phone or the i-pad was essential for the company's sustained growth and profitability. The second case could be considered as an instance of double-loop learning. With no specific information from the market, Apple was still able to create a product that launched the firm on its way to glory. A decade later, despite various mimetic approaches by other organizations such as Samsung, Google, etc, Apple continues to hold the reins in the technology sphere.

Towards Convergence

In the first section, we essentially looked at user innovations. These innovations which are basically worked-upon modifications or additions to the product sold by the firm are points of learning for the organization. We argued that there are less formal mechanisms which are being used to capture this important facet of organizational learning. Despite the abundant availability of research papers in this field, there is considerable scope for enhancing the learning by firms which can be used as the enhanced platform for launching newer, futuristic products or new, yet with 'advanced-features' nature of products.

In the second part, we identified points of similarity noticed from the feedback processes which were studied as part of the marketing discipline. To reiterate

briefly, the customer feedback helps firms to correct a defect; it could help them use feedback as a benchmarking tool or the feedback can be positioned as a strategic tool to drive firm performance. In effect, the crux of our argument is that the customer feedback process can also be used as a form of organizational learning. It could help firms adopt a tactical stance, where they are merely informed about complaints and they adopt corrective action or it could also help firms take a proactive approach, leading to the development of new-to-market, innovative products.

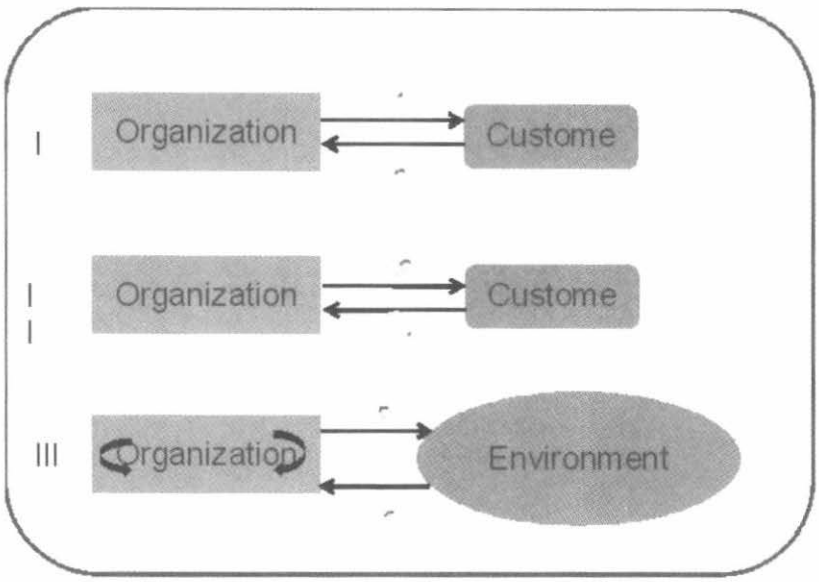
In our third section, we looked at the ways in which organizations learn. This learning has been viewed mainly from the perspective of reactive or iterative learning, which is termed as single loop learning and proactive, future-sense learning which has been accepted as double loop learning. In most literature, these learning processes are viewed from the perspective of adaptation and facilitating change processes within the organization. There is less literature on whether these learning processes can be construed as a contribution to the business performance of the organization. The point of departure here which is markedly different from the first two sections is the role of the external agent, the customer. In organization studies, researchers have not considered the source of learning in granular detail. For example, researchers typically describe organizational learning that stems from an adaptation to the environment. Change within an organization is also ascribed to the subtle influence of the environment in addition to the forces acting from within the boundaries of the organization. The possible reason is that the unit of study is the organization and therefore the unit of focus from the external environment has not been specifically studied. In the earlier two sections, the unit of study was the customer – this customer could be an individual or a firm.

Integration: Towards a Multi-Dimensional Perspective

As we approach an understanding where the parallels across different functional disciplines have been established, we can summarize and put our insights together in an integrated framework. In this section, we attempt to synthesize our insights; this will lead us to identifying potential multi-disciplinary areas for future research.

An integrative framework can be best illustrated through an understanding of the figure below:

FIGURE 1: An Integrated Framework



I. This corresponds to our first argument of understanding innovation from the perspective of user contribution to the firms' learning and future product development efforts. In this respect, the dyadic interaction can be described thus. For the firm, it develops and sells a product or service to the customer. There could be an information dissemination device or toolkit along with the product or service. Besides, the sale could possibly involve an annual service or maintenance contract since these are typically high technology, high value products that are being sold to a customer with specific needs. Examples could be a special educational software package, an i-pad, an air-conditioner or a speedboat. Customer involvement in this process has started even before the purchase of the product. Possibly, the customer could be involved in the pre-sales process, even a year or more preceding the actual time when he takes possession of the product.

In the reverse loop, the firm is in a position to learn (if it so chooses) about whether the customer further innovated on the delivered product. As we have seen from the literature, most firms dealing with high technology products routinely involve their users and lead-users in the product development process. Hence, we encounter a specific case of organizational learning. The dyadic interaction has thus facilitated a single loop learning, which could manifest in the case of an incremental innovation or a double loop learning if the firm is able to foresee the market in the long term and delivers a futuristic product.

II. In our second context, we looked at a similar scenario through the lens of a marketer. In this case, the firm-customer interaction depicts a sale along with toolkits and warranties which could be applicable to specific, high value products. Again, it could be a low-involvement sale such as selling a toothpaste or soap. There could be a variety of products or services which qualify under the all-encompassing function of marketing.

In the reverse loop, we notice the process of customer feedback which is often channeled back to the firm. In the case of volume-driven, mass market, consumer products such as biscuits or soaps, there is scarcely any involvement from the customer except when he / she perceives a defect. In this case, the feedback is routed back to the firm through an e-mail or a hotline number (telephone call). The receiver at the other end, who is a representative of the firm notes the complaint and sends the message to the concerned marketing or quality assurance department depending on the structure of the firm. In a few instances, there could be action taken by the concerned department, which addresses the complaint at first; later on, the feedback could be used constructively to enhance the product or service. For a high involvement product, lead users can be involved in a manner similar to what was set out in our discussion in the first section.

Similar to the first case, we have potential for organizational learning-in this case from one specific point of interaction from the external environment,

the customer. As we argued in the preceding section, this feedback could be taken up as a source of further improvement in the product or service. Again, the industry context matters. For a low involvement product, perhaps, the learning is single loop in nature. For a high technology product, there are chances of double-loop learning, where specific learnings from the user help the firm to bring out a product that is far ahead of the customers' present requirements.

III. In our final section, we looked at the organizational perspective. The interaction of the organization with its environment could be multiple in nature. There could be relationship with a buyer, there could be a sale, and there could be interactions with competitors. In short, there is a plethora of potential relationships and interactions. Out of these, some could result in specific learning for the organization. The second theme is the adaptation of the organization to the environment. The organization adapts through its exposure to the changing dynamics of the environment. Various social, business or personal factors could impinge on the organization's innate response to the external pressures. When we use the symbol of internal cyclic arrows (refer Figure 1) III, we are referring to the adaptation that happens due to the internal characteristics of the firm. These internal factors arise owing to culture, personal interactions and the governing vision of the founders. Again, the legacy could also play an important role. In addition, these cyclic arrows point out the potential for learning that results from the internal processes of the firm. These could be job rotation, learning through the instrumentality of cross functional teams and other similar, yet novel initiatives that are adopted by the organization.

We pose a question: what does the environment give back to the organization? Answers range from revenues to legitimacy. The answers could be classified on a large scale with varying degrees of tangibility. Due to some responses from the environment, the organization could adopt corrective, remedial measures. These measures would possibly lead to enhanced products,

re-structuring within the firm or call for a different direction to the growth trajectory of the firm itself. As before, we have a multitude of possibilities. Without dwelling too much on our prior arguments, we may briefly state that all the dyadic interactions give rise to potential for both single loop learning and double loop learning.

At this juncture, we briefly sum up the circled numbers in the form of a table for brevity and clarity. Despite our prior discussions on all the dyadic interactions, it is worthwhile to put it all together in a more summarized form as in the table below:

TABLE 1: Interactions – A brief description

Field of Study	Circled No.	Significance, Implications
I. Management of Technology, Innovation	1	Selling to customer, could be bundled with other features like a service, maintenance contract, etc.
	2	Capturing user insights: from user-innovation perspective, absence of formal mechanisms
II. Marketing: Customer Feedback Process	3	Sales. Could be bundled with other attributes creating a lock-in. Can involve low involvement purchase (such as consumer packaged goods) or high technology goods or services also
	4	Customer feedback process. Capture of insights. Leads to product enhancement or enables creation of innovative products with future orientation. Ultimately results in value creation for the firm, organizational learning
III. Organizational Learning	5	Interacts with the environment. Can involve selling, buying and the interacting agent could be buyers, suppliers, competitors, regulatory agencies, consulting companies, etc
	6	Helps the organization adapt, change in line with the dynamism of the environment. Moreover, it helps the organizational learning – can be single loop or double loop learning

Concluding Discussions

In this section, we draw upon the insights gleaned from the previous sections and attempt to explore two radically different lenses through which we can view organizations and organizational learning.

Firstly, we can look at the three different disciplines that we have looked at in isolation for the purpose of further research. In this scenario, the disciplines and area of focus would continue to be studied separately. What we would ideally propose for this line of thought is that certain areas need more focus and research: 1) the absence of sufficient literature on the capture of insights from user innovation: what kind of methods or processes can firms adopt to capture this elusive aspect of learning which proves to be critical for the firm's success and future growth? 2) In the field of customer feedback, which is addressed as part of the functional marketing literature, what mechanisms can be adopted to give greater intensity to capturing customer usage data, customer feedback and complaints, etc.? and 3) with regard to organizational learning, what industry and firm contexts support single loop learning and double loop learning? – How can firms distinguish and adopt different internal and external structures to facilitate this intangible, yet powerful process?

A second stream of thought looks at just one discipline which is organization science. As we have clearly seen that there are aspects of organizational learning in the way user innovation practices are captured, we can infer that the first section has strong linkages with organization science. Besides, user innovation itself is a narrow, yet focused area of research within the discipline, 'Management of Technology & Innovation'. In addition, what is clearly evident is that technology or innovation is part and parcel any organization. Technology is an enabler and innovation can be viewed to comprise two dimensions – technical novelty and market selection (McKelvey, 1997: 201). In the same vein, innovation is defined by activities. Hence, technology and innovation come under the purview of organization science. Using a similar line of reasoning, marketing is taken as a function within an organization and it falls as a subset of organization science. Hence one needs to study management of technology, user innovation, customer

feedback, feedback loops and mechanisms and single and double loop learning in an integrated fashion. Currently, the research is carried out in silos and while they add to the body of knowledge within functional streams, the greater advantage which could result from a holistic perspective is lost.

Extending the reasoning from the preceding section, we can also emphasize that innovation needs to be an integral characteristic of every functional discipline. In other words, innovation needs to be an activity or a process that is built into marketing, research and development, technology, production and logistics. We might, therefore, do away with functional silos and stress on the need for an inclusive approach. Such an approach would benefit firms as they seek to grow their business and move forward in the competitive marketplace.

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