Working Paper 4

Discussing innovative potential of Indian ICT firms

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3.1 Introduction

In our discussion of innovative potential we lay before you some data that we have collected from our module on survey, which is part of a methodological system we have developed for studying the Indian ICT innovative landscape. What ensues is the sharing of the data and the arriving of insights that does not represent the entire ICT landscape in India. This is not a representative sample. What we conjecture reflects on the company that we have had the good fortune to work with. In unraveling the ideas of ICT innovation, we needed to create some workable concepts. Two emerged during our numerous discussions. They were innovative potential and collaborative capacity. This chapter focuses on Innovative potential. By innovative potential we refer to within firm potential to engage with innovation. We believe this is a dynamic construct as we do not pretend to capture something static but dynamic, hence the endeavor to understand the potential of companies to be innovative. In section 3.2 we discuss the foundation of innovation potential, in section 3.2,1, we discuss the singular view, this means the actors view on innovative potential. In section 3.2.3 we discuss the organizational view and in 3.3 we conclude this chapter. In our conclusion we argue that ICT firms in India have an acute understanding of the role skill and experience plays in enabling innovation. We also notice that there is a mix picture in the area of knowledge acquisition, particularly when it comes to idea capture. We end this chapter with some key insights.

3.2 Foundation of Innovative Potential

To move ahead in our process of inductively exploring the innovative potential of Indian ICT companies we need to take stock of the current state of thinking on Innovative potential and how it adds value to the firm's innovativeness. We refer to *innovative potential* as the latency within individuals, firms and institutions to drive a change in status-quo, predicated on the pursuit of new ideas, make incremental improvements on old processes, improvise on earlier methods of achieving goals and develop sustainable institutions of R&D that will render solutions to perceived challenges. Consequently, the individual, the firm and the institution are important stakeholders in our understanding of innovation. Innovative potential indicates as much the potential of an individual to take part in innovative activity as it tells us about the firm's ability for the same, and the drive for institutionalizing the process of innovation into a formalized R&D.

Innovative potential for us is a social construct predicated heavily on how knowledge is acquired for learning. Researchers have identified the "depth of knowledge", predicated on the ability of firms to acquaint themselves with domain specific knowledge: focusing on a deeper understanding of the basic foundations of how the product is made and operated. Hage and Aiken (1970) present evidence that knowledge depth, measured as the extent of professional

training, is associated with innovation utilization. This knowledge is scientific in nature allowing firms to innovate or to respond to competitors, (Cohen and Levinthal 1989).

3.2.1 A singular view on Innovative potential

We conjecture that the actor in a firm plays a critical role. For him to engage in innovative activity he not only needs to have knowledge but also be able to acquire it. This view is referred to as the Knowledge acquisition view. It discusses the ability of the individual to acquire, where the focus is up gradation of the existing knowledge or latency of intent. The knowledge view focuses on the systems individuals; organisations and institutions use to interact with the knowledge base. For our purpose we will focus on the knowledge acquisition view, but after we briefly explain other views of innovative potential. The knowledge view is about determining and acquiring pertinent knowledge for innovation. The normative view focuses on the organizational and systemic ideas relating to solving a problem, the values and norms embedded in social systems that drive the innovation process. Thus the normative view is about understanding the underbelly of the social system, which provides the backdrop of the context for innovation. The communication view, discusses how the acquired knowledge is disseminated to a wider foreground. There are veering views on the nature of communication, the focus here, is not so much on the medium of communication but the purpose, utility and the value of the communication.

The knowledge acquisition view, talks about how knowledge is pursued and internalized for taking part in the process of innovation. It predicates actor driven innovation on how the actor acquires knowledge; for research predicts a causality between learning and innovation, (Cohen and Levinthal 1989). There are two perspectives to the learning thesis, the acquisition of knowledge as in R&D and other inquiry based activity and the other addresses the transfer of knowledge (Rothaermel and Hess 2007) and Tilton (1971), who observed learning by transfer as a prominent learning strategy adopted by individuals in the semiconductor industry, remarking that "prior knowledge enhances learning because memory; or the storage of knowledge, is developed by associative learning", and "events are recorded in their memory by establishing with pre-existing concepts" (Cohen and Levinthal 1989). Whereas Bradshaw, Langley, and Simon (1983) and Simon (1985) (Cohen and Levinthal 1989) propose that learning is not different from problem solving and in turn from the creative process so predicated on innovation . Whereas Lindsay and Norman (1977: p517) suggested that learning is about the linking of the individuals' knowledge base to the larger knowledge base of the community.

In the ICT sector we conjecture that individuals acquire knowledge through distributed and shared problem formulation rather than seeking to engage in in-depth knowledge acquisition. Hence institutionalized learning, as in formal training programs are less effective than distributive and open learning. Distributive implies, where reference groups help each other to develop a common solution to a problem then having it addressed through training. Open learning is where a shared sense of problem formulation is arrived at through dialogue bereft of formal hierarchy and in-depth knowledge.

A note of caution; it is essential to state that neither of these constructs are mutually exclusive, meaning studying one construct does not imply the exclusivity of other constructs in the framework, as all constructs relies on human behaviour; for behaviour itself cannot be decomposed into modules

indicating the existence of one as an exclusive conceptualisation from the other. To address the theoretical sensitivity that comes with exclusivity, we conjecture an alternative approach. We argue that dominance implies the influence of a particular view in a particular context without having to decompose human interaction on the notion of sterilising reality. Exclusivity implies that if an event occurs the other event linked to it will not occur. If the empirical context encapsulated by knowledge sharing is observed then it is imposable to suggest that communication is absent or does not play an important role in knowledge sharing. A far better empirical measure is dominance, implicated by a simple realisation, for instance if knowledge sharing is seen as dominant it does not imply that communication as a construct is non existing, all it implies is that when knowledge sharing dominates around a locus other constructs are playing the facilitators role.

From table 1 which talks about the role of people who took part in the innovation and from table 2, which indicates the amount of man-months spend on the process of innovation. These two tables tell us a lot of the firm's ability for knowledge acquisition. First consider that that project managers play an important role in their company's innovation. A project manager is so defined structurally as having a critical and in-depth amount of knowledge on two dimensions, the technology and managing highly skilled people. From table 1, it appears that project managers play a critical role in the innovation process, along with project members and consultants. This further indicates that while project managers are considered to be knowledgeable, they are not the sole repositories but firms allow cross-fertilization of knowledge by allowing project members, (a project member is a person who may not have operational responsibility but is part of the project) also notice the involvement of the consultant.

Figure 1, Duration spent as project manager
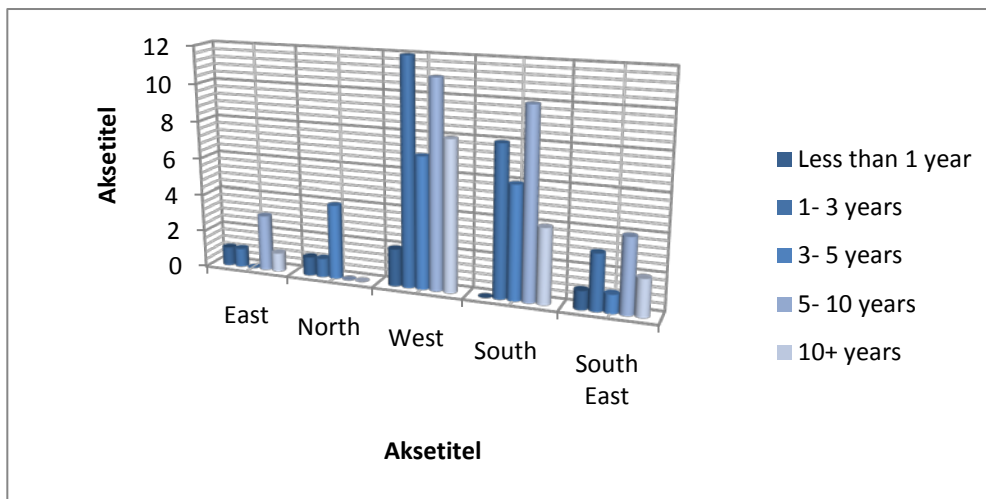
Source; Euro-India ICT survey

In which case the acquisition of knowledge works on two trajectories, one formalized roles, which is given to a experienced manager. When we investigated the experience level of the managers we realized that individuals answering the project managers section of the survey had at a minimum 3 years of experience which is 67% and if we consider the most experienced project manager group of 5 years and above this indicates a cumulative experience of about 47% of the respondents see figure 1.

From the knowledge acquisition view, we can speculate on entertaining three conjectures, first, that there seems to be an assumption that the more experienced the manager the higher his knowledge. While this may be true in terms of experience in managing people it may not be the case in terms of domain specific skills. Second, the fact that consultants from outside are engaged indicates the potential for cross-fertilization of new knowledge. Third, from table 2, the focus on innovation can be said to be positive, as there seems to be a concerted afforded in the allocation of man months to the acquisition of knowledge. Acquiring knowledge is a time consuming process, it can manifest itself in many ways, for instance skill up gradation takes time and so does the planning of training programs. What can we say about innovation from these two tables, Not much but we can conjecture that free flow of knowledge plays an important role, so does in-depth experience and sufficient allocation of time for searching solutions.

Table 1 Individual role in the innovation process?

Role of respondent	Responses	Relative frequency
A. Project manager	91	68
B. Project member	13	10
C. Assigned to specific jobs within the project	8	6
D. Consultant to the project ("specialist")	13	10
E. Ad hoc assistance	9	7

Source; Euro-India ICT Survey

Table 2 Firm resources spend on the innovation?

	General	Project managers
Less than 12 man months	14	15
12- 36 man-months	38	36
36- 72 man-months	10	12
72- 144 man-months	12	12
144+ man-months	25	25
Total	100 pct.	100 pct.

Source: Euro-India ICT Survey

Now consider table 1 and 2 with the information from table 3, whereas table 1 indicates importance given to experience, table 2 tells us that company management understands innovation is time consuming, thus the cost of seeking is well factored in the process of innovation. Now let's consider table 3, respondents seem to indicate that their innovation occurred primarily as a within house search, or a recalibration of existing resources to address the new objective from within. Now consider how a focused problem solving work entails. It can be identified as the reallocation of internal resources; it can also work with acknowledging, meaning recognizing existing skills, hence investing in the potential of latency.

What does this tell us about first the ability of the group to learn and what is the objective of the learning? Let's speculate, because a large number of innovations is addressed through simply a problem solving exercise. We can conjecture that knowledge acquisition takes place when problems are determined, internal skills identified and connected to the problems for their solution. In addition problem solving is a creative endeavor. This suggests that during problem solving the solution set need not come from the reference group but could come from outside, for instance consultancy. Intuitively then we can safely conjecture that while problem solving is the main channel for knowledge acquisition the companies do engage in some kind of open sharing of knowledge by taking the help of consultants.

What does this tell us about the innovative potential of the actor from the companies we have surveyed? First, there exists latency as most problems specific innovation is internally addressed. To some extent outsiders, in this case consultants are aloud enter the innovative environment. This indicates the willingness to some degree to remain open for the cross fertilization of ideas.

Table 3 How did the innovation emerge in your opinion?

	General	Project managers
Focused process for a well-specified given objective	24	21
Found new and emerging solutions for the given objective	39	41
Applied established methods to an evolving objective	12	14
Creative problem solving process for an evolving objective	25	23

Source; Euro-India ICT survey

3.2.2 Building Innovative potential

At the organizational level researchers studying innovation provide a number of varied insights into how organizations spur innovation. For our purpose we consider a number of indicators. For instance openness to allowing joint problem solving activity is an indication of innovative potential, because it allows the improvement of skill. In an organization leadership is a critical feature of enabling and sustaining innovation. A firm perspective on innovative potential needs to take into account the intake qualification and the focus on

training of personal but above all a firms potential to be innovative can be predicated on how the firm interacts with its competitors, how it is able to capture and manage new ideas.

In the ICT sector organizations rely increasingly on cross-functional teams, swiftly to tackle urgent and novel issues (Kozlowski and Bell, 2003). In such dynamic and fluid situations leadership becomes that more critical in enabling and sustaining innovation, (Cascio, 2003) (Klein et al. 2006). Leadership is able to set to tone of how the firm responds to challenges, for instance if the leadership is suspicious of the market then the firm will react differently to the market as opposed if the leadership sees the market as an institution that they can use for their gains.

Firms that envisage a joint cooperative problem solving approach to addressing fluid challenges are often able to synchronize their skill sets in a better way and are able to gaps in skills, which enables them to look for complementary skills in the cooperative partnership they create. Further for a partnership to be successful both depth of knowledge and breadth of knowledge of the technology and domain are essential for a successful outcome. The question we need to ask, does the data indicate that Indian ICT companies engage in cooperative problem solving?

The firm's ability to renew itself in terms of its knowledge base is as critical to openness or leadership. The central value adder in being innovative is the knowledge base of the firm. And it is the attitude of the firm towards employment and skill up gradation that can have a positive impact on the innovative potential of the firm. For instance if the firm is insular and does not allow its employees to engage freely with other organizations, or if it does not get into alliance fearing that its knowledge base will be compromised then the existing knowledge of the company represented by its human capital has a high possibility to stagnate and knowledge renewal will seas to empower individuals, consequently the firms innovative potential may suffer in the long run. The question, we need to ask ourselves, does the data indicate that firms have a healthy attitude towards knowledge renewal and skill up gradation?

One way to understand the firm's knowledge seeking attitude can be determined by how firms create normative systems for institutionalizing their employees. Do firms encourage informality or insist on formality when they engage in knowledge renewal? From table 4, there are some interesting insights to be had. A large number of respondents indicate that they allow the agreement between partners to be changed if the change is documented (53 responses in favor), in some instances. In other instances some respondents indicate that they always allow changes to the agreement (25 responses indicate this) and only 8 of them confirm that they do not allow at all and 17 respondents indicate that they allow only in exceptional circumstances. What does table 4 indicate? In effect there are two dominant feature of this table; First, The firms that responded to the survey appear to allow instances of a change in the nature of the relationship during the project period. Second, a larger number of respondents allow some modification of the relationship, some prefer documentation other do not. What can we induce about firms' innovative potential from this table?

Three key insights, first, that Indian ICT firms tend to have a flexible attitude towards joint

redefinition of project, this implies that firms work with known firms and therefore do not worry about changes in the scope of the project. Second, firms have a flexible approach to problem solving and third that firms are focused on the solution set and not the institutionalization of normative systems.

Table 4 Flexibility in customer contracts

Project specificity	Responses	Relative frequency
Do not allow	8	7
Only exceptionally allowed	17	15
Allowed if well documented	53	46
Always allowed	25	22
Not relevant	12	10
Total responses	115	100 pct.

Source; Euro-India ICT survey

Another indicator of a firms innovative potential could be explored in the way firms enable the creation of idea capture mechanism. An idea capture mechanism does not necessarily mean a formal system of capturing ideas; it could also imply an informal approach to acknowledging and capturing ideas. What does table 5 indicate? There seems to be fair spreads of firms that have a formal mechanism 48 responses, as opposed to 53 responses have no formal mechanism, with 22 responses indicating a semiformal agreement to inform and 27 share using a workshop. Two key insights emerge, first, that there is a acute understanding of the importance of ideas, second that there is some mechanism formal or informal to deal with idea generation. We could then inductively conjecture that Indian ICT firms have healthy attitude towards new ideas, they are not threatened and look to incorporating them in their businesses.

Table 5, Modes of idea capture

Methods applied	Responses	Relative frequency
No formal procedure	53	26
Obligate to inform superior	22	11
Internal committee/unit is a recipient	42	21

Methods applied	Responses	Relative frequency
Dedicated workshops for capturing ideas	37	18
Repository for capturing ideas	48	24
Total responses	202	100 pct.

Source Euro-India ICT Survey

3.3 Conclusion

In the sections above we have focused on the knowledge acquisition view. This view talks about how knowledge is acquired. The knowledge acquisition view is a critical component of our innovative potential construct. What can we say about innovative potential in summery that is revealing and insightful from our data set of Indian ICT innovation? A note of caution, we are looking at potential because we believe that innovating in the ICT sector is a fluid phenomenon and needs to be discussed as a potential. The contradictory aspect of this position is then why did we choose to capture a fluid conceptualization of innovative potential with a static tool such as a survey. To address this point let me indicate that the survey should not be seen as an independent methodology on its own. We have chosen to adopt a methodological system where the weakness of one method is the strength. Thus the four-module methodology we have extensively described in a preceding chapter. So what insights can we share about Indian ICT innovative potential? After having studied and analyzed the data we can safely provide four insights

First, there is a high reliance on experience and domain skill among project managers. This means that project managers with their in firm competencies will be well positioned to address in firm challenges arising out of a change in technology or market

Second, the knowledge acquisition view indicates a mixed picture. This means even though there is a high reliance on experience there is limited effort to train individuals to meet technology challenges. This implies that the knowledge acquisition is more a personal endeavor and not an institutionalized process. This in the long run may not be such a critical disadvantage because informality among employed tends to create knowledge networks that are sustainable across firms and useful for building collaborative capacity on the other hand leaving everything to individual effort may de motivate bright skilled individuals who will look for a place that acknowledges their skills and is able to improve it by providing institutional support. Therefore we would imagine that knowledge acquisition should be at a balance in the ICT industry, hence a mixed picture.

Third, it appears that modes of idea capture mechanism seems not play an important role in the innovative life of a firm, personally this may not be such a critical oversight but institutionally from an organizational perspective it can become critical. For instance if there is no knowledge repository, in whatever shape it might be may leave the organization exposed and lacking ideas

when critical challenges appear in the horizon. Organizations need to develop a mechanism to capture or store ideas if they harbor ambitions of becoming innovative in the future.