

# Communication Enabling the Implementation of Innovation

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**Abstract.** This paper describes the proposed research approach of a research project called, *Communication Enabling the Implementation of Innovation*. The point of departure for the project is a view on innovation described as hard work rather than mere creativity or inventions. This leads to the conclusion that innovation processes can be supported and enhanced through planned activities. The paper promotes a perspective linking innovation to the well established concept of a learning organization. The aim for the research project is threefold; 1) to generate a method for the development on an index measuring “innovation maturity” of organizations. 2) to generate specific measures of innovation processes and 3) to develop a feedback system enhancing the innovative organizations towards a learning organization.

## Introduction

Organizations must change in order to survive (Argyris and Schön 1996; Christensen 1997; Aldrich 1999; Davenport and Beck 2001; Huber 2004). There is a continuous urge for innovation. Innovation is not primarily of inspiration, it is hard work (Drucker 2002). Innovation constitutes the activity of creating purposeful, focused change in an enterprise's economic or social potential. Examples have shown (Christensen 1997) that organizations can not rely on developing existing, sustainable technologies into excellence. Eventually there will appear some disruptive technology that will change the business profoundly. The management of knowledge is inseparable from the process of innovation. Innovation is regarded as the greatest payoff from knowledge management (Holsapple and Joshi 2000). Managing knowledge for its own sake adds little to organizations. The value added comes only when knowledge is applied in order to improve, change or develop specific tasks and activities.

Open communication of information, ideas and feelings is the lifeblood of innovation. Our culture is gradually changing to a more open, communicative style. The cultural shift is greatly supported by the rapid development of advanced information and communication technologies (ICT).

In our view innovation is a group process and feeds on interaction, information and the power of teams.

There are few studies to support the management of innovation within SMEs (Scozzi and Garavelli 2005). The perspective on the implementation of innovation and supporting processes is our contribution to the extensive innovation research which has been reported over the last ten years.

## Perspectives on innovation processes

In analyzing and suggesting support to the implementation of innovations we propose that it is important to recognize different analysis perspectives. Scozzi&Garavelli (2005) propose the following.

### Innovation as sequence of tasks

Studies have identified stages and tasks that are necessary but not sufficient to the development of successful innovations. The suggestion to appoint specific organizational roles e.g. gatekeeper or innovation champion appears in these studies as well as the definition of general models for project design, (Koput 1997). The main problems addressed comprised by this perspective are task definition, management and control, role assignment, management of the part-whole relationship.

### Innovation as decisions evolving over time

An innovation process is triggered by the decision to create a new object or improve some business process. This requires consideration of alternative options. Different options must be ranked and rated based on some criteria such as feasibility, cost, time etc. This is a complicated process due to uncertainty and ambiguity surrounding the criteria's. All information needed might not be available, information can be misunderstood. Priorities and criteria might be unclear or ill defined. The main problems addressed are problem framing and problem solving, retrieval and storing of historical decision records and decision rationale.

### Innovation and strategic processes

This perspective stresses innovation as the major source of competitive advantage. The models proposed comprise elements like market needs, technologies and resources available to the firm, market time and entry mode. The main issue addressed is the development of strategy and communication, the kind of innovation to develop and variables to consider etc.

### Innovation and political processes

The political dimension of innovation processes may consist of internal conflict management and resistance to change. Issues addressed are management of attention, creation of a good currency, change management and conflict management.

### Innovation and interpretative processes

Innovation processes have a cognitive and interpretative dimension. These comprise analysis of the involved actors, cognitive characteristics, perceived roles and roles assigned to other participants. To address cognitive problems it is necessary to consider cultural factors.

### Innovation and creative processes

Creativity is the ability to develop new ideas or products based on observed patterns and relationships. Creativity can be stimulated and fostered. Domain specific knowledge and motivations are considered the main contributors.

### Communication in organizations

Before computers, communication was mainly oral and carried out in meetings. Only important data and information was sent and stored in regular mail. When the fax was introduced to facilitate communication in organizations, this was considered as a revolution in efficiency. Nowadays the fax is rarely used. Computers allowed mass storage in databases and the personal computers allowed people to create and print large amounts of documents. The email started

a boom in the electronic communication of messages. To coordinate the complexity of an ever growing electronic communication groupware and document handling systems were introduced. Then there was a need for a further coordination and solutions like Data-Warehouses, Enterprise Resource Planning Systems (ERP), and Enterprise Systems (ES) were designed to handle the formalization of complex abstract information and knowledge management systems were designed to manage the valuable and growing body of knowledge in organizations. In our research we study how it is possible to process the available information and knowledge in order to promote the development of a learning organization.

### Knowledge transfer

The methods and systems for knowledge transfer have developed the last 15 years. Nancy Dixon (2000) shows the knowledge transfer processes can be formalized in order to enhance their efficiency (Dixon 2000). Examples of such formalizations are 1) Serial Transfer, where the knowledge gained in one project is transferred to another project by allowing crucial persons from the first project to work in the second project, or 2) Far transfer, where the knowledge gained is transferred to another division located in another place by having a key-knowledge worker. In the proposed project we describe how formalized routines may support the type of knowledge transfer that is associated with the implementation of innovations.

### Problem statement

To what extent can our developed methods and measures can be used for:

1. diagnosing if the company is updated to a modern “high-tech” environment
2. evaluating if the company can be classified as a learning organization
3. supporting a communication designer in the work of promoting the development of a learning organization
4. being stored in a knowledgebase and if relevant knowledge can be retrieved by the stakeholders in small companies in Sweden

## Theory

The practice-based view on knowledge management (KM) in organizations draws on practice theory and the notion of situatedness to argue that organizational competences are embedded in practice. This is put in contrast to the perspectives in earlier works focusing on how to build competencies within particular domains of expertise e.g. communities of practice.

## The concept of innovation

Our definition of innovation is not limited to the generation of an innovative idea. No matter how powerfully the innovation is, one fundamental question must be addressed; what value will be created with this new idea? The focus of the innovation process should be to improve some practice rather than just doing things in another way. The innovation must comprise a statement of expected improvements and some indication on how to measure the benefits should be expressed.

Innovation means doing things differently, exploring new territory and taking risks. There has to be a vision of what could be, or a deep fear of what might happen, if things don't change.

## Innovation, invention and creativity

Innovation is not to be confused with invention or creativity. An invention might lead to innovation but innovation is not limited to pure inventions. Innovation could mean improvement of established processes rather than inventing fundamental new ways of performance. Creativity is put into context as a tool of innovation and can be executed at all levels in an innovation process. Innovation is more of a mindset, an attitude, than a set of processes and techniques.

In our perspective teams are essential in innovation activities as well as the creativity promoted by coordinating different competences. Idea-capture and management systems involve everyone in the organization in the innovation process. These systems invite broad-based participation and empower employees to influence the company's future directly. Rewards have moved away from individual and monetary to team-centered celebrations and peer awards.

## Innovation and environments

An organizational environment that is flexible and empowering and that welcomes ideas, tolerates risk, celebrates success and encourages fun is crucial to innovation. Organizations do not exist in a vacuum but operate in an environment that provides opportunities and imposes constraints. Organizational environments are highly dynamic, and according to Huber (2004), "*in the future, environmental dynamism will be greater, and will be increasing*". According to Huber will managers that still assume that dynamic environments faced by today's business organizations represent a period of transition to a more stable era be profoundly wrong. Or managers that believe that these dynamic environments are the new era, they will also be wrong. The future environments of business organizations will differ in important respects. According to Huber (2004) they will be characterized by 1) more and increasing *scientific knowledge*, 2) increasingly effective information, transportation, and manufacturing *technologies*, 3) more

and increasing *complexity*, 4) more and increasing *dynamism* and, 5) more and increasing inter firm *competitiveness* (Huber 2004).

## Communication

The communication and information flow is limited and guided by the organizational structure (Rogers and Rogers 1976). The information systems today need to be adapted to organizations and implemented in ways that the users will accept. Kreps (1990) expressed the importance of consideration for the informal, social line of communication in organization. The communication between actors in the organization is vital for sharing experiences and knowledge related to the performed tasks. The use of information and communication systems can enhance both informal and formal communication and it creates positive influences on the organizational processes and its development. Individuals in organizations participate in different networks, regardless of their position in the organization, both informal and formal (Kreps 1990). Today the development concerns the knowledge, the organization or individual who possess the knowledge has the power. Therefore it's important for organizations to consider this when a system for capturing and sharing knowledge and information are used in the organizational context (Castells 1996).

## Information Technology in innovation

Firm performance is highly dependant on the ability to change with changing environments. The most important change agent in recent years is IT. It not just about making existing business processes more efficient but rather building new and developing new products and services. IT in itself have not produced sustained performance advantages (Powell and Dent-Micallef 1997). IT creates advantage by leveraging or exploiting preexisting complementary human and business resources (Clemons and Row 1991). Regarding IT as an organizational resource have been proposed. The relation between IT capabilities and firm success has been stated as demonstrated. “ *Results indicate that firms with high IT capability tend to outperform a control sample of firms on a variety of profit and cost-based measures*” (Bharadwaj 2000). In spite of intriguing anecdotes describing IT as a key driver to business performance, the link between IT, on a general level, and superior business performance have not been convincingly established. The mechanisms linking IT to financial performance are still to be established. One aspect in making the mechanisms transparent is to view IT, not as a black box but rather with higher resolution. Not as a generic artifact per se but rather as a tool for enhancing or even making various functionalities possible. A focus on function rather than IT as an artifact would suggest a more process oriented view on IT capabilities. Implementing new IT technologies might even

trigger auditing of, and the redesign of inefficient processes and this might be the most valuable contribution from IT investments.

## The Ceii project

The Ceii project (Communication Enabling the Implementation of Innovations), is designed to investigate the potential of a new role, *the communication designer*. The communication designer is equipped with a box of tools for the measurement of organizational index. These indexes and measures describe the quality of organizational processes and reveals potentials for innovation. The goal is to increase the awareness and direct attention to important managerial processes, knowledge management practices, to increase the organization potential to stay alive. By promoting the importance of implementing and making these processes visible the communication designer provokes the organization to make a list of priority of preferable changes. What is the most important process to improve? In a second phase the communication designer constructs and evaluates specific measures concerning the innovation process in focus. This comprises the construction of a feedback system of measures. By incrementally working through business processes the organization is proposed to eventually learn how to develop their own measures and pursue a more formalized method for the development of the firm. The Ceii-project is expected to contribute to the development of firms towards a learning organization.

The Ceii-project is a joint project between academy and industry. In Sweden it is an explicit mission of universities, expressed by the state government, to disseminate results from academia and to collaborate with industry in the local environment. This mission is called “the third assignment”, the other two being education and research. Academy is represented by the informatics group of Kristianstad University and industry is represented by five companies situated near the university.

### The partner firms

The five firms engaged in the project are: Jitech AB, Skyltforum AB, Nectar Systems AB, Kapuseru Trading Company and Krinova Science Park.

#### Jitech AB

Jitech is an engineering workshop. The company is of the kind often referred to as small and medium sized companies (SME) comprising 92 employees. Jitech has undergone a major change in the last ten years and managed to survive in a declining business. Through the development of unique competencies they have managed to establish their business in new markets with new ideas on customer relations, production strategies and constantly modernizing production by

implementing advanced computerized robot technology supported by advancing management functions. Navigating in an increasingly dynamic and changing environment Jitech have succeeded to bring in new ideas and convert them to organizational routines demonstrating systematics and continuity. According to their own statement a turning point for Jitech was when they decided to start the process towards ISO 9001 certification. This process was initiated from customer demand. Jitech realized that they would be excluded from winning contracts if they were unable to demonstrate trustworthy routines and processes in their work on quality. It took a few years to identify and work through all processes but the process was regarded as successful. Today Jitech are very proud of their quality-system and they state it to be a competitive advantage. They can demonstrate cases when they have been asked to take on contracts due to the fact that their quality system is formalized, externalized and recognized by their customers or co-contractors as they prefer to call them. Jitech also own a subsidiary IT company, Johnson Business Systems, which they purchased with the goal to develop an enterprise planning system exclusively for Jitech. The process of developing measures to feed into the new information systems are in progress and presents a quite unique opportunity to follow.

#### Skyltforum AB

Skyltforum is a company with 9 employees comprising three partners owning the company. They produce advertising signs all from large neon displays to smaller entrance signs and other signboards for a variety of applications. A major part of their customers are construction companies who need to promote themselves at their building sites. They are constantly seeking to develop their products and one of their ideas for their building contractor customers is to print signs on textile fabrics and hence make the time and effort for the contractors in handling large signs at construction sites easier and less time-consuming. They have recently purchased, on an ad hoc coincidence manner, a new technological innovation making it possible to produce relief on rock and granite and hence broadening the scope of their application portfolio. The possibilities are there but they are not convinced how to implement the new machine and how to create processes around its use.

They are also in the midst of a process towards ISO certification. The story has remarkable resemblances to the development described by Jitech. Skyltforum lost a major contract with a nationwide public authority due to the fact that they were not certified according to the ISO 14001 standard. This was obviously the trigger to engage in a process towards certification. Initial results from this effort have already generated some pay-offs and the consultant engaged initially will be contacted and contracted to continue the implementation process. This provides an opportunity for the project to generate results.

### Nectar Systems AB

Nectar Systems AB is a software development company. The company started 1996 as the result of a business division and is owned to 100% by two partners who also are operationally active. The company has 11 employees. Their base product is a development tool called Nectar 4GL, for developing and running applications working towards database handlers in multi-user systems. With this generic tool they have constructed an application, ISOX 2000, which is a system for handling documentation of cases within local government social services. Since their customers to a large part are public government departments they have to comply to a highly formalized routine, the governmental purchase-agreement (statligt upphandlingsavtal), in order to win contracts. This generates a lot of communication problems. The information to be provided is to a large degree predefined and it generates great frustration with Nectar that some of the features they want to promote regarding their system are neglected or even forbidden in the basic data required by the purchase-agreement. There is another interesting aspect of the relationship between Nectar and its customers. The majority of their users are women. The software developers at Nectar are men. When Nectar is confronted with their users, in education programs or otherwise, they have frequently been confronted with the statement; *this is a typically male system*. Nectar has confronted the project team with the question that they have to understand. *What constitutes a typically male system?* Nectar is also in the process of developing an enhanced interface with their ISOX 2000 system. They feel that they have to adapt to what is perceived as a de-facto standard, the Windows interface. Nectar also recognizes that the logic and graphics at large could be improved and has a constant internal discussion on how to improve the interface. This discussion is pursued from a variety of perspectives; the sales persons want an interface that attracts attention in a sales context, others see the problem from an engineering perspective etc. This provides rich opportunities for the project to generate results.

### Kapuseru Trading Company

Kapuseru trading company is a firm constructed as a cooperative of interaction designers. The business concept builds on visualization skills. This could be manifested in the production for printed media such as conference programs, corporation presentations, illustrations of books etc. The media could also be web-technologies or multimedia applications. Kapuseru is experimenting with their internal management routines and practices in a somewhat innovative way. They are seeking optimal management practices suitable for their form of business. They also want to develop their concept towards a more holistic product, trying to embed qualities and variables that are not traditionally considered among graphic designers. Kapuseru is truly an innovative organization challenging the creative side of innovation in striving to expand traditional

borders. The enthusiasm, unique skills in contemporary techniques and a newly emerged and recognized novel market provides opportunities for the project to generate results.

#### Krinova Science Park

Krinova Science Park is located next to Kristianstad University and was founded in 1999. The core organization consists of 3 employees but some 50 organizations are located within the science park. The organizations comprise business enterprises, research groups, education groups and enterprise promoting initiatives. The development of the Science Park as such is not in focus for the project but rather its function as disseminator of results. In its capacity of meeting place for the local industry it benefits the project to have such an organization as its partner.

The group of partner companies constitutes to our mind an interesting and quite heterogeneous collection of organizations. Being diverse is in our views a great asset since this provides us with the potential of bringing experiences from different contexts together which is believed to be beneficial in our quest for generic measures and methods.

#### The Communication Designer

One objective of this research is to equip the organizational role, the communication designer (ComD), with a box of tools. One important tool for the ComD is a set of techniques for process modeling and analysis. These business modeling techniques (BMTs) have often been considered as inappropriate for processes such as new product development that are highly unstructured. The argument for being inappropriate is that the processes are linked by reciprocal rather than sequential dependencies (Scozzi and Garavelli 2005). Nevertheless an interest in modeling techniques to support innovation is rapidly increasing though few modeling techniques have been proposed to support innovation processes.

#### Preliminary innovation needs expressed – a pilot survey

The initial part of the project is concerned with defining the most urgent needs of the companies and also to try to analyze to what extent these there exist new “innovations” that could satisfy these needs. With innovations in this stage we refer to any type of new idea, method, model, technology, or artifact that has been proven as useful in other companies.

We make a preliminary diagnosis of the needs of each company by doing a) interviews with managers and employees, b) analysis of process descriptions and other available documentation, c) interviews with customers.

After the preliminary interviews we create scenarios describing possible implementations of innovations in order to allow managers and employees to react to something tangible. The purpose is to bypass the difficulties involved with academic discussing abstractions with people who are focused on some well defined practice.

We present the scenarios to all relevant stakeholders and ask them to react to them. Are they relevant? Do they seem to be interesting? If they like them, are they feasible?

## Method

Interpretive research methods have gained prominence and been increasingly accepted by the Information Systems (IS) community. The growth of interpretive research includes a shift in IS research away from technological to managerial and organizational issues. And it includes a desire to study problems in the richness of their real-life setting.

In the social sciences the differences between positivist and interpretivist research have been characterized as objective versus subjective or quantitative versus qualitative. Klein and Myers (1999) suggest that a more useful way of categorizing the research into positivist or interpretivist is by looking at its underlying ontological and epistemological assumptions (Klein and Myers 1999). The question is then not one of deciding if the research study uses numbers or not, but determining what is the underlying philosophical position.

The aim of all interpretive research is to understand how members of a social group, through their participation in social processes, enact their particular realities and endow the with meaning. And to show how these meanings, beliefs and intentions of members help to constitute their social action. The interpretive perspective emphasizes the importance of subjective meanings and social-political as well as symbolic action in the process through which humans construct and reconstruct their reality.

Organizations, groups, social systems do not exist apart from humans and hence cannot be apprehended, characterized, and measured in some objective or universal way.

### Interpretive case study

Case research is considered to be particularly appropriate when theoretical knowledge on a phenomenon is limited or when the need for capturing context is important (Cavaye 1996). It has also been stated that a case study is highly useful and relevant when a complex management situation or process is being researched (Remenyi, Money et al. 2002).

This kind of case study is focusing on human interpretations and meanings. The empirical approach often consists of the in-depth case study. Research involves frequent visits to the field site over an extended period of time. Interpretive researchers are not saying to the reader that they are reporting facts; instead they are reporting interpretations of other peoples' interpretations. It is thus vital in order to establish some credibility to the reader, that they describe in some detail how they have arrived at their 'results' (Walsham 1995).

## Research approach

After analyzing a variety of scientific approaches we came to the conclusion that our work shall be defined as Interpretive Field Research as defined by Klein and Myers (1999). Klein and Myers describe seven principles that can be used in field studies and all of them suits our purposes. We will apply them in four steps:

1. Interviews and seminars to find out what types of methods, measures and artifacts that may be useful for each of our partner organizations.
2. We incrementally develop and evaluate methods and measures for diagnosing to what extent the organization has adapted itself to a) new technology, b) new management ideas, c) information technology, d) customer needs, e) an ever changing environment.
3. We develop methods and measures to be implemented in the organization in order to support in becoming a learning organization.
4. We create, define and evaluate a new type of professional role that we call a Communication Designer. Such a role could be taken/given to any employee in order to secure the implementation of innovations. To allow an employee to assume such a responsibility, it is necessary to create user-friendly instructions concerning how methods and measures could be introduced in an organization in order to support the organization into becoming a learning organization.
5. Creating a Web-based system for supporting a communication designer in transforming an organization into a learning organization

Step number 4 and 5 above are not included in our initial project proposal and we assume that we will not be able to complete them within the project. We do, however, include them here in order to demonstrate that we see a continuation of a follow-up of the project after it has been completed.

## Expected Results

### Preliminary inventory of potential innovation projects

Presentation and analysis of the data and findings it has generated. Theory developed in the theory section should be used as a scaffolding to describe the data and its findings. Interview quotes and excerpts from the documents that were reviewed should be presented here, together with your interpretation of these bits of data.

What is relevant in this organization? Which measures can be used? Are there any existing measures that can be reused or must new be developed?

### Generation and evaluation of specific measures

Throughout the project we will continuously develop and evaluate a growing body of formal measuring methods and example measures, to be able to diagnose to which extent the company has implemented innovations, and also to measure to what extent the company can be classified as being a learning organization. During the first years these methods and measures will be developed in close cooperation with the companies. The reason that this is needed is that such measures are always very context dependent and it is necessary to secure that they are accepted by the employees. The second and third year we will refine the use and coordination of measures in order to secure that they can be used by the management to make the company more effective, efficient and profitable and.

### Towards a learning organization

This project aims to investigate if the hypothesis that innovation processes must contain a set of quality measures connected to a system for feedback. By including quality measures in designing innovation processes a system for feedback creates a possibility to generate reflection. Reflection is a prerequisite for learning and therefore this feedback system can be viewed as a step towards creating a learning organization. Implementing routines for the continuous evaluation of feedback is proposed to be an important step towards a more viable organization.

## Discussion

If our research shows that the developed methods can be implemented and reused in more than one company, then we will formulate a manifesto describing how the methods could be implemented in companies in order to increase their

effectiveness. If our results show that the measures can be reused by communication designers we will create a database with measures that is available for companies and "communication designers" when they develop learning organizations. If there is evidence that this is appreciated we will try to create a knowledgebase with measures for national use.

Our vision is to continue this project and the next step after this first part is completed is to develop a system for educating *Communication Designers*. Our preliminary understanding of the role of a communication designer leads to the conclusion that this ought to be an internal role and not exercised by an outside consultant. In an initial phase this is probably inevitable. But we believe that the communication designer should be an explicit role in every learning organization.

## Conclusion

We will describe to what extent our developed methods and measures can be used for:

1. diagnosing if the company is updated to a modern "high-tech" environment
2. evaluating if the company can be classified as a learning organization
3. supporting a communication designer in the work of promoting the development of a learning organization
4. being stored in a knowledgebase and if relevant knowledge can be retrieved by the stakeholders in small companies in Sweden

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