

Performance measurement procedures that support innovativeness rather than hamper it

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This paper addresses the contemporary challenges in increasing firm-level innovativeness and developing appropriate performance metrics. The authors discuss these challenges and provide a literature review on the innovation enhancing factors in service industries. They subsequently study the case of a multinational telecom company that tries to renew its innovative capabilities after a restructuring. An interpretative approach, based on employee focus group interviews and an extensive management workshop, is taken to co-develop context specific factors that enhance innovativeness. These factors include, amongst others, personal recognition and acknowledgement for an innovative achievement, available time, customer intimacy, and a clear innovation strategy. The identified factors will be used in a follow-up research aimed to develop performance measurement procedures that support the company to develop and exploit its innovative capabilities.

1. Introduction

Over the past two decades, business unit managers and general managers in many technology-based companies have been trying to increase their grip on the research and development activities carried out within their company. An approach to do so, which became popular in the early nineties, is 'third generation R&D management' (Roussel *et al.*, 1991). In 'third generation' R&D organizations, the portfolio of R&D projects is selected by a multi-disciplinary team of

managers based on the strategic objectives of the company and its business units. In these third generation organizations, the R&D activities have also become closely tied to the work of other business disciplines like marketing and production, resulting in a multi-disciplinary product and process development process. Around the same time that the concept of third generation R&D became fashionable, R&D performance measurement also received increasing interest in the literature as well as in practice, in large companies (see e.g. Kerssens-van Drongelen (1999) for

an overview).

However, in most of these companies the metrics chosen were lagging indicators, they focused on direct output (e.g. patents) and short-term outcomes of the product and process development process: revenue, profit or cost reductions within the first 3-5 years after market introduction. These outputs and outcomes were often related to R&D investments, resulting in metrics like 'Number of patents per megabuck' (Robb, 1991), 'R&D cost effectiveness measure' (Kuwahara and Takeda, 1990) or the 'R&D effectiveness index' (McGrath and Romeri, 1994). In many companies, the focus on these short-term results metrics, combined with emphasis on time to market and squeezes in R&D budgets, seemed to have resulted in a shift in the R&D portfolio to more incremental product and process improvements at the expense of investment in 'real' innovations. Though that may have been a right strategy at that time, it became clear in the late nineties that the rules of the game had shifted once more and that in the emerging knowledge-based competition era knowledge creation, learning, and innovation had become the key drivers of corporate competitiveness (Nonaka and Takeuchi (1995), Teece *et al.* (1997)).

In the R&D expenditure statistics it can indeed be observed that managers of leading companies, especially in the US, seemed to acknowledge the need for more innovation, and boosted their investment in basic and applied research (Larson, 2001), although recent economic developments seem to have weakened this trend somewhat (DTI, 2003). Nevertheless, fresh interest in, for example, the Dutch managerial literature in how to stimulate more 'real innovations' (see e.g. de Vos, 2002) and the interest of governments into this topic (Larson, 2001) support the thesis that increasing 'real' innovation rather than just increasing the output of the product and process development process is currently one of the key drivers of corporate competitiveness. The question is: how can innovativeness be enhanced and how could one measure whether a company's innovative capability is indeed improving and paying off?

In this article we will explore the first part of the question raised above: how can innovation be enhanced? This will be done using as our study object a multinational telecom company that is interested in increasing its innovativeness and wants to find suitable performance measurement as a supportive tool in this process. The telecom focus adds a dimension to our study: in this service industry it is difficult to create and sustain a product or service advantage in the eye of the customer. The reasons are twofold. It is difficult for a consumer to evaluate and compare services prior to purchase and consumption, and an advantage is often short lived and easily copied (Storey and Easingwood, 1998). Many of the services are difficult to differentiate for longer competitiveness, e.g. mobile phone logos and ringing tones are very easy to imitate.

The structure of this article is as follows. We begin with a literature review in which we will explain what real innovations embrace and list which human,

information and organizational factors have been found to benefit innovativeness in specific cases. In the subsequent section the case study design and findings will be presented and discussed. The paper will be continued with a description of the next phases in our research plan that will focus on the development of measurement procedures to support innovation in the case company. We conclude the paper with a discussion of the managerial and theoretical implications of these findings.

2. Literature review

Real innovations

In order to develop and manage competitiveness and continuous growth, "real" innovations are necessary. Real innovations offset current capabilities and practices and can provide a large competitive edge whenever competitors feel the need to follow your path later on. Real innovations mean significantly new technologies, ideas or markets that go beyond extensions of current service offerings, or incremental developments to processes. The term 'real' innovation partly overlaps with terms like radical, disruptive or discontinuous innovation (Kassicieh *et al.* (2002), Utterback (1996), Christensen (1997)) However, these terms are often exclusively identified with technological innovation. Since there is also an increasing interest in the improvement of innovation processes in less technology-intensive industries like the service industry (Cook *et al.*, (2002), Meyer Goldstein *et al.* (2002), Menor *et al.* (2002)), we prefer to use the more neutral term 'real' innovation. Real innovations are often more difficult to pinpoint earlier, as proved the case of SMS (short message service). Often, whole groups of people complement each other and together enhance the innovation process.

Innovation enhancing factors

If there is one thing to be learned from the literature regarding real innovations than it would be that the uncertainties and dynamics of their development make it difficult to manage and predict the success of these innovation efforts. There does not seem to be a univocal process, organization structure and culture for their development success. However, there is a big difference between saying there is no single best practice for the development of real innovations and saying that an organization cannot create conditions that will make it more likely that real innovations will occur. In fact, there is already a considerable amount of literature on innovation enhancing factors.

Resources	
R&D funding	Kuusisto and Meyer, 2003; Quinn, 2003
Specialised development facilities	Kuusisto and Meyer, 2003; Thomke, 2003
Time	Kuusisto and Meyer, 2003
Development teams with breath of experience	McDermott and Meyer, 2002
Well defined responsibilities	Vermeulen, 2004
Sufficiently talented staff	Kuusisto and Meyer, 2003; Quinn, 2003

Table 1. Literature overview of resource factors that enhance innovation.

In the next paragraphs, we will briefly review the literature that discusses such factors. Interestingly, these studies are often based on qualitative research methods such as storytelling, addressing the broad context of the case presented. Initially, we focused in our literature review on both factors *enhancing* and factors *hampering* innovation. However, since these are often two sides of the same coin, we decided in the end to list the factors only in their positive form as an enhancing factor.

We acknowledge that most of the presented literature on innovation enhancing factors is based on research in *production* companies (e.g. Mascitelli (2000), McDermott and O'Connor (2002), von Hippel et al. (1999), Thomke et al. (1998)). Other studies (e.g. Buckler and Zien (1996), McGrath (2001), Zien and Buckler (1997)) covered both production and service companies, but they not always explicate differences between the two. A few authors specifically discuss real innovations in service industries (e.g. de Brentani (2001), Thomke (2003), Vermeulen (2004)). In our list we will thus make a distinction between factors that *generally* enhance innovation and factors that primarily do so in a *service oriented* industry. To ease a well-ordered analysis, we clustered the enhancing factors into resources, communication, culture, strategy, process & structure, and the market.

Resources

The basic resources that are necessary for innovation are time, money and facilities. Funding creates opportunities (Kuusisto and Meyer (2003), Quinn (2000)). In more specialised companies, these funding has to be (partly) invested in specialised development facilities to develop product offerings in detail (Kuusisto and Meyer, 2003). However, in most organizations the funding is mainly invested in people's time to explore and create new opportunities. McDermott and O'Connor (2002) found that the people who sought to join radical development teams were characterized by breadth of experience, in addition to depth. Furthermore, they had typically rotated through a number of positions in several business units before joining a business development group. The deep informal networks that they could access for information at any time, and the experimental knowledge of most of their firm's businesses were

considered invaluable (McDermott and O'Connor, 2002).

An element that is characteristic for service companies is blurred responsibilities for innovative activity. Badly defined innovative responsibilities results in conflicting priorities and too little time on innovative activity (Vermeulen, 2004). Service industry companies often do not have an official R&D department, as this has not been required in the past. And as competitive pressures to come with new service offerings mounted, people simply received an added responsibility apart from their short-term day-to-day activities (Vermeulen, 2004). Companies did not sufficiently predict the changed and intensified competition in service offerings, consequently they did not restructure the organisation for service offerings sufficiently. The results are service development functions that are not designed to cope with the demands of today's strong competition in services. A natural consequence of this development is that the R&D functions are too small and possessed with insufficiently talented staff (Kuusisto and Meyer, 2003; Quinn, 2000).

Communication

Despite the vital nature of resources and the fact that increased investment in basic and applied research activities may certainly contribute to more innovation, it has been indicated by several authors that successful technology-based innovation requires more than just an increase of research funding and that there are more sources to innovation than R&D and technology.

Kostoff (1999) and Anderson and Fryer (2004) advocated that new ideas and inventions would rather result from melding the ideas of disparate disciplines than from putting more effort into achieving a deeper understanding in a specific area. In a sense, they plead for cross-functional interaction, one of the key aspects in third generation R&D management. In her concept of fifth generation R&D management, Amidon Rogers (1996) stressed that this cross-fertilization should even be placed in the broader perspective of an innovation system in which companies actively collaborate with all kinds of stakeholders such as customers, suppliers, partners and distributors in order to exploit each other's knowledge and to cooperatively develop new.

Communication	
Heterogeneity and melding ideas of disparate disciplines	Kostoff, 1999; Anderson and Freyer, 2004; Rogers, 1996
Cooperation in alliances (instead of mergers and acquisitions)	Powell et al., 1996; Eisenhardt and Martin, 2000; Johnson, 2003; Hagedoorn and Duysters, 2002
Multiple learning based network linkages	Coombs and Metcalfe, 2000; Miles et al., 2000; Hagedoorn and Duysters, 2002; Granovetter, 1973; Shawney and Prandelli, 2000
Commitment and open communication with partner	Blomqvist, 2002; Kässi et al., 2003
Frequent (informal) interaction between innovators which harnesses tacit knowledge	Mascitelli, 2000; Weerawardena and McColl-Kennedy, 2002; Tsai and Ghoshal, 1998; Tidd et al., 1998
Customer intimacy	De Brentani, 2001; Thomke, 2003; Vermeulen, 2004; Zien and Buckler, 1997; Von Hippel et al., 1999; Kumar, 1999
Front employees that are in close contact with the customer involved in the innovation process	Von Hippel et al., 1999; Thomke, 2003; Vermeulen, 2004
Strong relationships between visionary marketing people and innovative technical people	Buckler and Zien, 1996; Zien and Buckler, 1997
More intense communication during development processes to improve clarity	Vermeulen, 2004; Tidd et al., 1998
Utilization of information technology	Van der Aa, 2000; Kuusisto and Meyer, 2003; Floricel and Miller, 2003; Quinn, 2000

Table 2. Literature overview of communication factors that enhance innovation.

Her thesis seems to be in agreement with other literature (Powell et al., 1996; Eisenhardt and Martin 2000) and with a recent IRI trend survey in which many R&D directors reported their intention to invest more in alliances and joint ventures, and in contracts for university research (Johnson, 2003). Hagedoorn and Duysters (2002) point out that cooperation in alliances should be favoured over the more bureaucratic forms of mergers and acquisitions to stimulate learning and idea generation. Some go a step further and stress the importance of a multiple learning based network, vertically and laterally across industries (Coombs and Metcalfe (2000), Miles et al. (2000)). Such a network can take care of the fast flowing of knowledge to the mutual benefit of the parties involved (Hagedoorn and Duysters (2002), Granovetter (1973), Sawney and Prandelli (2000)).

Differences in corporate cultures between asymmetric partnerships can result in communication breakdown; trust and open discussions are an essential start to open up a fertile cooperation (Blomqvist, 2002; Kässi et al., 2003).

Several authors (see e.g. Mascitelli (2000), Weerawardena and McColl-Kennedy (2002) Tsai and Ghoshal (1998), Tidd et al. (1998)) also identified frequent interaction between innovators as an effective approach to harness their tacit knowledge, which he considered to be a key factor for breakthrough innovation (see also. The reduction of physical distance and informal meetings such as coffee break discussions are ideal occasions to get people closer together and to transfer their tacit knowledge effectively and spontaneously).

Customer focus (De Brentani, 2001; Thomke, 2003; Vermeulen, 2004; Zien and Buckler, 1997) was also found to be the key to breakthrough innovations at 3M (von Hippel et al., 1999). Client-focus is a significant element in service innovation process. Kumar (1999), among others, has empirically examined the impact of long-term client relationships on the performance of

business service firms. The findings suggest that over the long run relationship-oriented business service firms achieve higher returns on their investment than transaction-oriented firms do. In effect, long-term client relationships do not increase the productivity of business service firms or lower their service delivery costs, but they do help to maintain gross margins (since relationships do not expose business service firms to excessive price pressures over time). Kumar (1999) also found that clients do not engage in long-term relationships with the objective of driving down the cost of procurement, but rather to enable service firms to add more value to their offerings over time. A closer relationship between the frontline sales people that are closely involved with the customer could bring rich ideas to the people involved in the R&D function (von Hippel et al., 1999; Thomke, 2003; Vermeulen, 2004).

To stimulate the development of attractive customer oriented product offerings, strong relations between visionary marketing people and innovative technical people are essential (Buckler and Zien, 1996; Zien and Buckler, 1997). Technical ideas can be very novel and effective, but without the customer's valuation of the solution successful marketing might not come to fruition.

More intense communication between the people involved in the development process is generally necessary when more teams are involved in an R&D project. Clarity about how the project progresses, and who is doing what requires intense contact but might significantly fasten up the process (Vermeulen (2004), Tidd et al (1998)).

ICT can be a productive tool and enable efficient communications (van der Aa, 2000; Kuusisto and Meyer, 2003; Floricel and Miller, 2003; Quinn, 2000).

Culture	
Encouragement of risk-taking and experimentation	Mascitelli, 2000; McGrath, 2001
Team members with an emotional commitment to innovate	James, 2003; Buckler and Zien, 1996
Inspiring innovation stories	Mascitelli, 2000; Buckler and Zien, 1996
Unique team identities with a developed group mind	Mascitelli, 2000; McGrath, 2001; Tsai and Ghosal, 1998
Company-wide engagement in innovation	Vermeulen, 2004; Zien and Buckler, 1997
Corporate culture that stimulates entrepreneurship and creativity	De Brentani, 2001; Weeravardena and McColl-Kennedy, 2002
Supportive and inspirational leadership	Buckler and Zien, 1996; De Brentani, 2001; McDermott and O'Connor, 2002
Trust and trustworthiness	Blomqvist, 2002; Tidd et al., 1998; Tsai and Ghoshal, 1998
Recognition and personal acknowledgement for an innovative achievement	Buckler and Zien, 1996; von Hippel, 1999; Padmore et al., 1998; Chesbrough, 2003

Table 3. Literature overview of cultural factors enhancing innovation.

Culture

Another practice recommended by Mascitelli (2000) to harness tacit knowledge is early and frequent prototyping. However, he also noted that for these approaches to be effective a culture that encourages risk-taking and experimentation is required (also McGrath, 2001). An obstacle to free experimentation is the pressure and danger of losing experimentation. This might not only inhibit experimentation and free spirited ideas, it can be a source of lost opportunities.

What hugely helps is emotional commitment of team members, which might be created by the right environment. James (2003) used in this respect the term 'the smell of the place', and called on academic researchers to put more effort into further exploration of what constitutes this 'smell' that evokes researchers' commitment to innovation. Such research into the 'soul of the innovation process' should balance what he perceived as an overemphasis on rational innovation management approaches in the current innovation management literature.

In literature we found a few of such studies. For example, Mascitelli (2000) listed several elements of innovation enhancing environments, such as the

development of inspiring 'innovation stories'. Buckler and Zien (1996) found that stories communicate vivid images of most important beliefs. These images are the vehicle for fast learning and long retention. The stories travel through the organisation and draw the attention to other innovators within the company.

The concept of a "group mind" explains how individuals effectively interact interdependently and heedfully produce reliable results, even though they do not explicitly know how the whole system works. This idea has been found to have strong empirical association with group performance outcomes (McGrath, 2001; Mascitelli, 2000; Tsai and Ghosal, 1998).

Others noted the importance of corporate principles such as engagement of the whole company in innovation and treasuring the identity of an innovative company (Vermeulen, 2004; Zien and Buckler, 1997). An atmosphere that displays unbridled confidence in the company's creative abilities has been found to enhance the generation of creative ideas and entrepreneurship (De Brentani, 2001; Weerawardena and McColl-Kennedy, 2002).

Strategy, process & structure	
A market focused strategy	Weerawardena and McColl-Kennedy, 2002; Kuusisto and Meyer, 2003
Frequent prototyping (experimentation) loops	Mascitelli, 2000; Thomke et al., 1998, Thomke, 2003; Floricel and Miller, 2003
Goal autonomy (which increases learning effectiveness in exploratory conditions)	McGrath, 2001
Strategy aligned innovation activities	Kaplan and Norton, 2004
Balancing short and long term goals (in collaborations)	de Weert-Nederhof, 1998; Kässi et al., 2003
A well planned product and service development process	De Brentani, 2001; Kuusisto and Meyer, 2003; Floricel and Miller, 2003; McDermott and O'Connor, 2002
Transition team and sponsor to support placement of the innovation within the existing business structure	McDermott and O'Connor, 2002
Accelerating the regulatory approval	Floricel and Miller, 2003

Table 4. Literature overview of strategy, process & structure factors enhancing innovation.

Market	
Regulatory changes	de Brentani, 2001; Kuusisto and Meyer, 2003
Competition and industry champions	de Brentani, 2001; Kuusisto and Meyer, 2003
Complex technologies that create new needs	de Brentani, 2001; Kuusisto and Meyer, 2003
Dot.com boom-bust cycle	Kuusisto and Meyer, 2003

Table 5. Literature overview of market factors enhancing innovation.

Leadership can bring support and stimulate inspiration (Buckler and Zien, 1996; De Brentani, 2001). Example behaviour by managers and allowing for mistakes are part of innovation leadership (McDermott and O'Connor (2002). Together with inspirational leadership come personal recognition and acknowledgement of achievements (Buckler and Zien, 1996; von Hippel, 1999; Padmore et al., 1998; Chesbrough, 2003). Appreciation and recognition bring sheer pleasure to the achievements of creative goals and is cited as a wellspring of innovation, not just for a few creative types, but for everyone in the organization. On the other hand, critical management can kill initiatives.

A helpful factor to create group and company wide cooperation toward a shared goal are trust and trustworthy relations (Blomqvist, 2002; Tidd et al., 1998; Tsai and Ghoshal, 1998).

Strategy, process & structure

A development strategy that follows the developments on the market can improve the success rate of innovations (Weerawardena and McColl-Kennedy, 2002). But empirical results mainly show that a market focused strategy result in incremental innovation rather than real innovations (Kuusisto and Meyer, 2003).

To survive in a fast changing environment, organizations must be able to cope with increasing complexity and high-velocity change. Exploratory learning is critical to the capacity of an organization to create variety, and hence, to adapt. Frequent prototyping and experimentation loops are often mentioned as methods for exploratory learning (Mascitelli (2000), Thomke at al. (1998), Thomke (2003) Floricel and Miller (2003)).

For organizations facing rapid change, it is also useful to generate internal variety. This strategy is also in line with option theory thinking (McGrath, 2001). Under highly exploratory conditions, greater goal autonomy will be positively associated with learning effectiveness but this relationship will be reversed under less exploratory conditions (McGrath, 2001). For exploratory situations, increasing supervision autonomy has a positive association with learning effectiveness, but when there is greater knowledge available to a project group, increasing the degree of supervision has a positive association with learning effectiveness.

Kaplan and Norton (2004) stress the importance of strategy alignment. An aligned organisation possesses employees with a commonality of purpose that have a shared vision, and an understanding of how their

personal roles support the overall strategy. "An aligned organization encourages behaviours such as innovation and risk taking because individual's actions are directed toward achieving high-level objectives."

Balancing the long and short-term goals of R&D activities guides product innovation along a long successful path that is essential for a sustained innovative product portfolio (de Weerd-Nederhof, 1998). The balancing of short and long-term objectives is especially of strategic importance to define goals for collaborations (Kässi et al., 2003).

Planning of the product and service development process is strategic planning that is essential to reduce market and technological uncertainties (De Brentani, 2001; Kuusisto and Meyer, 2003; Floricel and Miller, 2003). For real innovations, the short-term payback hurdles commonly applied to incremental innovation projects should be replaced by assessment of the long-term impact if a project would be successful. Such an assessment is often made by a sponsor that is higher in the organization and backs the project based on gut feeling (McDermott and O'Connor, 2002).

In large corporations, an important strategic decision once a real innovation project has passed a certain point, is to find a 'home' for the product or service in which it will be finalized and marketed (McDermott and O'Connor, 2002). Too often, they simply do not fit neatly within existing business structures and business units may not be too keen to invest in the last stages of the innovation journey. According to McDermott and O'Connor (2002, the project sponsor often plays an important role in convincing divisions to adopt the product or in creating a new business unit around it. They also suggest that a formally recognized transition group might be helpful in this respect.

Market

Regulatory changes, industry champions, intensive competition and complex technologies that create the need for support services might rejuvenate energy to innovate (de Brentani, 2001). The dot.com boom bust cycle asks for refocused attention (Kuusisto and Meyer, 2003).

3. Case company TeliaSonera

Knowledge-intensive business service (KIBS) firms have an innovative role in today's competitive environment; they are very much part of the restructuring economy (Nählinder 2002;

Weerawardena and McColl-Kennedy, 2002). The nature of these businesses dominates the kind of innovations, as Eisenhardt (2002) notes, “the play on that field is high-velocity with strikingly non-linear instability, unpredictability and ambiguity”. Large and incumbent players have come into a situation where they need to ceaselessly create, adapt and design new products and services in order to maintain their competitiveness. New technological competencies must be blended and absorbed throughout the company, as new technologies and business concepts demand new capabilities. Product and service innovations are increasingly appearing across companies and industries, often through unplanned interactions.

As part of global consolidations, two telecom operators have at year-end-2003 merged into the internationally operating Telco TeliaSonera (TS). TS operates in 20 countries and has over 25 000 employees. The recently merged company has established several decision-making boards in order to develop better customer orientation and to increase speed and transparency in decision-making concerning new product and service development. Additionally, a unit for strategic renewal has been established. It is developing pan-Nordic innovation ecosystem to get back industrial leadership in new Telco industry together with strong Nordic and international customer and competence base by delivering strategic projects in a virtual collaboration with internal and external experts. However, there is still much to do to develop the collaboration between the two previously separate companies to gain from improved effectiveness.

The harsh competition and the emerging new technologies may together destroy much of the present business based on traffic in cellular networks. For example, the new terminals enable the bypassing of operators’ networks and use of LAN and Bluetooth instead. Also VoIP (voice over IP) will be a major threat to the operators’ present business models and earnings logic. On the other hand emerging technologies and disruptive industrial role-play gives innovative operators new opportunities to enter new service businesses. It is critical for TeliaSonera’s R&D strategy and related R&D portfolio to address the threats and opportunities provided by the high pace of technological change. At present the organisation lacks ideal metrics for innovativeness or strategic renewal. Additionally, shared innovation processes between the recently merged companies are under development. Practicing managers are also rather critical to potential innovation metrics. As one of the managers said “It might be better not to have metrics, than to have metrics that guide our people to sub-optimisation or short-term goals”. Subsequently there is a clear need for improved understanding of what are factors that in their case would truly enhance innovation. Thereafter, the development of measurement procedures that would encourage the implementation and use of these enhancing factors would be important. Finally, it would be important to validate the fact that the investments in these innovation conditions and in the innovation activities themselves pay off.

4. The research method

The goal of the first phase in our research project, which is described in this article, is to find the factors that enhance real innovativeness at TeliaSonera. Given this goal, we hypothesised that in order to obtain innovative findings we, as researchers, should not simply follow traditional empirical research methods, but apply some of the innovation enhancing principles identified in our literature review in order to increase the likelihood of innovative results. Thus, instead of asking TeliaSonera’s managers in a questionnaire or interview whether or not the factors identified in the literature review presented in Section 2 were applicable to the TS practice as well, we used a social interpretative approach. Below the steps in our approach and the innovation enhancing principles applied are described in more detail.

We started with two focus group interview sessions with employees involved in the innovative activity within the company. They were asked what, in their opinion, were the main innovation enhancing and hampering factors. This was done to better understand the company’s current circumstances. Also, the innovation enhancing principle that people responsible for the execution of the process should be involved in the research is applied to this approach.

There were a few things we learned from the focus group interviews. Subsequently we changed somewhat our initial plan for the subsequent workshop with 13 managers responsible for innovation activities, and for the innovative capability of the company (an example of experimental learning). People in the focus groups were delighted to discuss innovation related issues and have “a voice” in the development process. However, we decided that discussion of innovation hampering factors would not be productive; to improve the probability of useful outcomes we focused the attention in the management workshop solely on factors that can enhance the innovative capacity of the company.

We also applied some other innovation enhancing principles: we attempted to build some trust to enable open and creative discussions. We also tried to improve the heterogeneousness of the group by inviting a wide variety of people from both the Finnish and Swedish parts of the organisation and clustered them in two groups. Furthermore we asked the participants to tell stories of successful innovations within the company and asked others to listen and identify the underlying innovation enhancing factors. These principles proved to be beneficial for idea generation.

In the workshop, the group was firstly split in two. In two parallel sessions, people were asked to describe how they would like to formulate TeliaSonera’s innovation strategy and what visible results that strategy would generate. Additionally they brainstormed which factors currently enhance innovation. After a joint discussion of the results, people were invited to tell each other success stories about real innovations in TS and to identify the underlying enhancing factors. Subsequently, the participants ranked their personal five most important

factors. Finally, each participant drafted a personal action plan that covers his or her own actions to improve the organisation's innovative ability.

The focus group sessions and the management workshop provided us with a ranked list of factors important for innovativeness. These factors will be used as input for next project phase: the design of performance measurement procedures.

5. Focus group results

Resources

Employees' possibilities to deliver are limited by especially the available time and resources. Employees believe that the availability of slack time to innovate is a factor that could improve innovativeness. Employees experience an emphasis on increased efficiency and short-term goals, and consequently lack the time and freedom to innovate effectively.

Communication

Customer intimacy is an appreciated factor by employees and they believe it would be useful to spend more time with the customer to get more feedback about their present and future needs.

Employees also recognise that stronger relationships between marketing and technical employees can increase the product and service innovativeness. They currently feel hampered by present organizational structure and "silos" within the large units. Better contacts and experimental learning with the sales department could improve cross-functional thinking and idea generation. In a more general sense, they think that more communication and informal discussions could facilitate company wide transfer of tacit knowledge. According to employees, communication intensity within the organisation could be improved to clarify innovative activities. Employees have the feeling that real collaboration has become more difficult after the merger. The same reaction could be noticed concerning learning based network linkages. Information does not flow freely enough. Employees would like to have more information available to everyone within the organisation. Only a few of the interviewed employees indicated the importance of alliances or partner collaboration as important factors to improve the generation of innovations.

It was also discussed that information technology should be utilized better to document and spread old ideas, as well as to experiment with new services.

Culture

The employees disprove the argument that goal

autonomy would improve learning in exploratory environments. They indicate that they would like to have clearer overall goals, and especially innovation related goals to direct their energy.

When asked about the overall innovative culture, employees noted that they needed more time to produce more real innovations. On the other hand, they also stressed the importance of organizational empowerment. In many occasions management attention and feedback would already make an impact to employees, to really make an effort to increase innovative ideas. They believe presently, innovation is not promoted sufficiently throughout the organisation. Employees consider that more support and appreciation from leaders would help them to innovate. According to group interviews, firm-internal champions should be used more often as well. They would inspire people to put more effort into innovating activities.

Employees' own emotional motivation to innovate and the role of a exceptional team identity did not enter the discussion. Innovation stories did not circulate well throughout the organisation, and employees expressed that they would like to hear more often what is learned in other parts of the organisation.

Strategy, process & structure

Employees did not go so far to suggest that they need a structured NPD process, but they expressed that they would like to understand the responsibilities and decision-making processes more clearly. Also, they indicated that improved stability and security within their working environment could be helpful. Employees at the moment have too much emphasis on short-term results and too little time for innovation. "It is a serious survival game all the time." Customers are recognised as important in the product development process, but their needs could be analysed even more thoroughly in the future.

Frequent prototyping and speed of regulatory approval was not articulated as factors that could improve innovativeness. The destruction of existing product and service portfolio was somewhat discussed.

Market

Employees consider close relationships to customers and other stakeholders, as well as participation in seminars as important means to gather and combine useful information to innovate.

6. Workshop results

Resources

Managers perceive both the available money and time

to explore and learn as important aspects to innovativeness; they believe these aspects belong to the five most important factors that enhanced innovation in the past. At the same time, they acknowledge that time pressures have increased and the fact that employees should get more time to freely think about innovations and to be creative. Funding and facilities are not a restriction yet, but it is clear that they may become a restriction in the future.

Communication

Customers are highly respected stakeholders and are seen as very important assets for the product and service development process. Yet, there is also a tendency that customers need to be involved more intensely and that close collaboration with customers should be pursued more actively. Communicative linkages between the sales and innovation activities are high on the agenda, and in the future increased involvement of front line employees and real contact with the customer is considered as a useful action.

The customer side should also be sought more often within the organisation. Innovators, sales and marketing people should link up more frequently; this could benefit customer oriented idea generation and help solve problems quicker according to the present managers.

After the merger internal communications have somewhat stagnated. Despite the experienced time pressure, managers know that the intensity of internal networking and informal meetings is critical. Additionally, an internal employee transfer system was proposed to boost creativity, help transfer tacit knowledge, and stimulate shared understanding. The same tendency was felt in the discussion on internal collaboration. The merger brought cultural differences and misunderstandings that diminished the cooperative and innovative atmosphere. During the workshop managers discussed openly the need to stimulate interaction and network more intensely and stimulate others to do so as well. This should facilitate learning-based communication and the mixing of different people and ideas, which should prove productive for increased innovation.

TeliaSonera has multiple promising possibilities to collaborate and co-develop with external partners, but the company's employees currently do not utilize these chances well enough because the external network is not clear to all. The advantages of a clearer external network are documented and managers plan to involve partners more closely.

Information technology should be used more effectively to spread and share explicit knowledge to everyone within the organisation. ICT could in this way take care of a better organisational integration, and it could stimulate assistance, cooperation and learning from dispersed intra-organisational areas.

Culture

The recently merged company has not yet developed a strong and cohesive corporate culture. The Swedish and Finnish parts of the organisation still seem to breathe different organisational cultures. People still very much have the desire to be the first to come with an innovation, but the winning feeling that is desired for a stimulating creative and entrepreneurial environment is somewhat lacking. Managers want to bring back the sparkle that feeds innovation through e.g. decreased internal competition and a shared motivation to innovate to which everyone feels part.

To start action in this direction, managers would like to have real innovations explicitly as a highest priority, which is highly valued and respected. The most convincing and effective way to do this is with the implementation of a company wide reward system for which a detailed performance measurement system might prove valuable. Recognition and rewarding of successful innovators is seen as a very important step. "We need our innovation gurus to show the way." Simultaneously some managers are afraid that a performance measurement system might prove counterproductive. Together with more respect for innovations, employees should be allowed to spend more time and freedom to generate ideas and be creative. Managers do believe that a more entrepreneurial and risk taking organizational culture will enhance innovativeness.

Inspirational leadership could be also improved. At team level, innovators seem closely knit, but overall people are short of the emotional involvement that brings real innovations. Some suggested the adoption of stretched targets as a solution to pull employees emotionally into a project and increase innovativeness. Though previously, there have been occasions that everyone felt a buzz in the air and people felt they were making something happen. The whole organisation needs to become more closely knit, and managers agree that inter-organisational trust and understanding should be improved to better innovate together.

One way to build a collective motivation to innovate is the spreading of innovation stories. By telling each other successful innovation stories during the lunch break, people started to notice its effectiveness. People believed that possibilities to innovate are often closer than one thinks and that the stories are a very good tool to heighten inspiration. Though, they regretted the fact that such stories currently do not flow enough throughout the organisation. The notion grew that there are many truly innovative people but their innovations are not known and recognised enough throughout the organisation. Here lay clear possibilities to heighten aspirations to innovate.

Strategy, process & structure

Managers complained that people do not get involved and up to speed in innovation activities because the overall innovation strategy is not clear enough. After the merger, the company lacks an explicit vision to guide innovation activities. More direction and a more

transparent long-term strategy will stimulate innovativeness and help them guide activity, uttered the present managers. The alignment of strategy and innovation could also benefit the strategic strength of innovation activities.

In guiding innovators along a chosen strategy the short term, but certainly also the longer term should be kept in mind. Managers recognise that the balance between the long term and short term could be improved. “We need to invest in long term innovativeness.” A customer-focused strategy is highly appreciated; close bondages with the customer are believed to create more and more useful ideas. Although there is always room for improvement, the company has a clear strategy to become increasingly customer-oriented.

Apart from a clearer direction for innovation activities more structure into the activities of innovating employees is not aspired. More loosely defined responsibilities could help to stimulate idea generation and innovativeness.

The frequent prototyping of product or service ideas is seen as a useful strategic activity that should not be shielded away from. Failures in experimentation are inevitable and should be allowed. More time could be made available to test and learn and prove the success rate of new ideas, especially in relation with the customer this could be a valuable activity.

Regulatory approval was not discussed as a bottleneck. But the speed of the innovation process and shorter life cycles of products and services is seen as a future source of competitiveness and value creation.

Market

The upcoming strength of American and Asian competitors is noticed and seen as a threat, but also as a motivating factor that could motor innovation.

Managers believe that the company has in the past been relatively strong in technical innovations, but there is room for improvement and offer the customer an improved service package.

7. Conclusion from the case study

The focus group discussions and management workshop gave insight into the innovation enhancing factors that are most important in this specific case. From the two parts we distilled a top 10 of factors that could best improve the innovative capability of the case company (table 6). These are not in order of importance, but the overall ten important factors.

Top 10 innovation enhancing factors	
1	Recognition and personal acknowledgement for an innovative achievement
2	Time to innovate and looser defined roles
3	Customer intimacy
4	Closer alignment of innovation to corporate strategy
5	Heterogeneity and melding of disparate disciplines
6	Encourage risk-taking and experimentation
7	Corporate culture that stimulates entrepreneurship and creativity
8	Team members have an emotional commitment to innovate
9	Trust and trustworthiness
10	Multiple learning-based network linkages

Table 6. Top 10 of factors that could enhance innovation at the case company.

Every party within the company acknowledged that people’s innovative abilities should receive more recognition. Consequently, everyone within the organisation should know the innovative people, who could become role models. This should be able to create the inspirational atmosphere that used to be present some time ago. The managers feel that top management needs to signal how important innovation is to all. Managers also recognise lack of time as problematic yet very common in lean organizations thriving for high efficiency.

Especially the managers believe more customer intimacy will bring more marketable innovations. Employees feel this need as well, they would like to know what the customer desires, but they currently also feel that it is important to have more chances for both internal and external networking. Individual employees’ roles seem restricted; there is a need for looser defined roles with an added emphasis on internal networking.

An inspiring and more explicit innovation strategy and vision were called for in order to guide people more effectively. Both employees and managers have the feeling they could innovate and do more, if they had a more explicit direction. However, also logically, the strategic direction was emphasized more in the management workshop being that their work is more related to corporate strategy than that of individual employees and experts.

Both managers and employees believed that innovation could be easily increased by stronger communication between functions and innovation related tasks in heterogeneous environments. Especially the managers mentioned the importance of the external network and the benefit it could have when problems could be solved together. It seems that external networking should receive more emphasis in everyday practice at both manager and employee levels. Among employees, the importance of the external network was less emphasized; internal networking and communication receive priority for the moment.

The company wide culture should recognise a high

need and urge to come with innovative ideas, one where risk taking, creativity and entrepreneurship are both stimulated and recognized. Also, structured knowledge sharing has not yet received the attention it should receive.

To accomplish this, especially managers believe that more fun and enjoyment instead of internal politics would enhance innovativeness. As one of the managers quoted a Swedish top cancer researcher: "It would almost seem impossible to which heights people could reach, if they did not care for internal politics and calculate for personal gains".

The overall trust level within the merged company does not seem to be especially low, yet possibly people could understand each other better. The workshop was very promising in providing a forum for shared discussions and mutual understanding. People recognised the challenges as shared tasks, which they could solve together in a trustful and open collaboration.

8. Next steps

As discussed earlier, the final aim of TS is to implement and stimulate the use of enhancing factors and to develop measurement procedures that would encourage the implementation and use of these enhancing factors and would show that investments in these innovation conditions and in the innovation activities themselves pay off. In this section we will discuss how we think this final objective might be achieved.

Finalization and implementation of the TeliaSonera innovation enhancing factors

As discussed in the previous section, two preliminary lists of key TeliaSonera specific enhancing factors have been identified in respectively the employee focus groups and the management workshop. Although we presented at the end a combined top 10, we acknowledge that this is our own interpretation of the priorities, which yet has to be validated. As a next step, we therefore suggest to test whether agreement can be obtained within the company for a priority list. This can be done through a questionnaire among a broader group of TS employees in which they are asked to rate the importance of the factors for their work and rank their top 5.

A first step towards implementation of the enhancing factors has already been done in the workshop by asking the participants which factors they could already start implementing in their own environment and how they planned to do this. The project sponsor will present factors that surpassed the power of individual participants to the Board in order to obtain commitment and funding for their implementation.

Development and implementation of innovation measurement procedures

From the focus group and workshop results and from literature review it can be concluded that human capabilities to harness their knowledge and to effectively share it with others within and outside the company, as well as the capabilities of the organization and its managers to create an environment in which their employees are willing and able to innovate, are at the core of innovation success. Thus, instead of measuring only the short term financial returns on investment in R&D and taking corrective measures that increase such short term results, managers intending to compete with innovativeness and are interested in whether their invested money is wisely spent, should broaden the scope of their measurement systems and include procedures that measure the status of these factors.

But adding leading indicators to the R&D measurement system is not the only improvement of the measurement system one could think of when pursuing an innovation-based competitive strategy. Another improvement could be the outcome metrics themselves. From the literature about new technological paradigms, it becomes clear that the actual adoption and 'take-off' of new technologies often takes quite some time and additional investment (Chesbrough (2003), Godoe (2000), McDermott and O'Connor (2002)). So when only innovation outcomes in the first 3-5 years are measured, one will probably underestimate the return on investment in innovation. Therefore, adding metrics to the performance measurement system that indicate the 'near future' and 'far future' *expected* outcomes of the innovation process (Kerssens-van Drongelen, 1999) could be useful as well.

Therefore, as a next step in the project, we plan to organize a new management workshop. The focus of this workshop will be on the design of measurement procedures. First, the added value of innovation performance measurement procedures at TS has to be discussed in order to obtain commitment. The seven generic functions of performance measurement identified by Kerssens-van Drongelen (1999) might be used as input in this discussion. Subsequently, alternatives should be sought or developed for the measurement procedures at a conceptual level and after evaluation one, or a few, designs should be chosen to elaborate. In the workshop, ideas for the design at a detailed level may already be generated, but the main part of the design will probably be finalized after the workshop in small iterative prototyping sessions with a few main users.

9. Conclusions

In this paper we explored the first part of our research question how innovativeness can be enhanced and how one could measure whether a company's

innovative capability is indeed improving and paying off.

The added value of this paper is twofold: first, we presented an overview of the literature on factors that enhance the probability to successfully introduce real innovations in the market. However, given the dynamics and uncertainty of this innovation process, these enhancing factors may not be applicable in all organizations. Hence, we stressed the importance to identify, which factors are of particular importance in a specific organisational context. From our case study we can indeed conclude that the selection of key enhancing factors is company specific. For example, in contrast with the literature in which goal autonomy was identified as an innovation enhancing factor, the employees and managers in our case company would like to have a clearer vision and strategy to focus their innovation efforts. Another interesting finding was that people directly involved in the innovation process have a slightly different view on the enhancing factors than their managers. This can be understood in the light that perception is always partial, and depends on the individual's role and direct experiences within the organization.

Secondly, the paper presented an approach how company-specific factors might be identified. In this approach, innovation-enhancing principles are applied to the research trajectory itself. Finally, we also discussed how the second phase of the innovation improvement trajectory could be approached: the design of performance measurement procedures that enhance rather than hamper innovativeness. In a future publication we will report about this step.

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