

## **Preparing organisations for employee-driven open innovation**

Oscar Amundsen\*  
Norwegian University of Science and Technology  
NTNU, NO-7491 Trondheim, Norway  
Telephone: +4791897206  
Email: oscar.amundsen@ntnu.no

Tone Merethe Aasen  
Norwegian University of Science and Technology  
NTNU, NO-7491 Trondheim, Norway  
Telephone: +4793059051  
Email: tone.berg.aasen@ntnu.no

Leif Jarle Gressgård  
International Research Institute of Stavanger  
Thormøhlensgt. 55, 5008 Bergen, Norway  
Telephone: +4797061318  
Email: leif.jarle.gressgard@iris.no

Kåre Hansen  
International Research Institute of Stavanger  
Thormøhlensgt. 55, 5008 Bergen, Norway  
Telephone: +4793043779  
Email: kaare.hansen@iris.no

### ***Abstract***

The present study addresses the need to prepare organisations, small or large, for open innovation approaches, including the development of capacity to exploit the potential benefits of such principles through Employee-Driven Innovation (EDI). Based on interviews in 20 Norwegian enterprises, we propose that EDI is an under-explored opportunity in many organisations, and that the systematic introduction of EDI practices increases organisations' ability to exploit open innovation principles and favourably impacts the capacity for innovation. Specifically, EDI results in a more general interest in improvement among employees, increased engagement in innovation processes, and reduced opposition to change.

**Keywords:** open innovation, employee-driven innovation, management, involvement, role performance, organisational culture, cultural characteristics, change

**Acknowledgements:** This project was funded by the Norwegian Ministry of Trade and Industry.

## **1 INTRODUCTION**

Invention and innovation is increasingly understood as a result of the exchange of knowledge between, as well as within, organisations (Caloghirou., Kastelli, & Tsakanikas, 2004; Hargadon, 2003; Powell, 1998). This view is reflected in several of the more recent theories and models of innovation, such as user-driven innovation (von Hippel, 1988, 2005), employee-driven innovation (Høyrup, 2010), continuous innovation (Boer & Gertsen, 2003) and open innovation (Chesbrough, 2003; Chesbrough, Vanhaverbeke, & West, 2006; Lindegaard, 2010).

The ideas of “open innovation” could be understood to embrace all of the preceding models, at least to some extent. The term was coined by Chesbrough (2003) a decade ago, to denote complex innovation strategies that involve searches by enterprises, across professional and organisational boundaries, for opportunities to advance their businesses. Although this is an indication of the essential role of the enterprises’ own employees in innovation, the prevailing dichotomy of “open” versus “closed” innovation seems to have partly camouflaged the continued importance of employees’ performance, including their cooperative skills. As a result, the predominant focus of innovation researchers has moved towards the significance of external sources for ideas and innovation, and the need to adapt business models accordingly. Few studies explore the opportunities inherent in the general involvement of employees in innovation, which is referred to as employee-driven innovation (EDI) (Byrne, Mumford, Barrett, & Vessey, 2009).

As in the open innovation perspective, the area of interest in EDI is the adaptation for, and advantages of, collaborative innovation processes. Inherent in this perspective is the fundamental assumption that employees have competencies and ideas that will strengthen an organisation’s overall capacity to innovate, given favourable conditions. “Employee-driven innovation” can thus be seen as a strategy that implies a more influential role for employees in innovation. This does not mean, however, that the importance of leadership is de-emphasised. Innovation processes will still require the engaged effort of both leaders and specialists. The contribution of EDI is the broad, systematic exploitation of employee experience and knowledge in innovation work.

The present study is based on a claim that the successful implementation of more demanding innovation strategies, such as open innovation, requires certain internal organisational and managerial skills (Kelley, 2010; Lindegaard, 2010). This claim is substantiated, e.g., by the work of Van de Vrande, De Jong, Vanhaverbeke, and de Rochemont (2009), who find that Dutch Small and Medium Enterprises (SMEs) are increasingly adopting principles of open innovation, and that dealing with the expanding network of external contacts that are generated as a consequence of this involves important challenges related to organisational and cultural issues. Accordingly, the importance of employees’ contributions to innovation and the premises for such contributions are addressed. The research question guiding this research is: What are the characteristics of successful practices for EDI, and what are the possible connections between such practices and the capability of firms to exploit open innovation principles?

The remainder of this article is organised as follows: The next section reviews relevant literature, followed by an outline of the research design. The fourth section provides the empirical findings, which are then assessed in section five. In the final section, conclusions are drawn, along with a few suggestions for future research.

## **2 THEORY: CURRENT UNDERSTANDING**

The principal argument of open innovation is that borders between enterprises and their environments are increasingly opening up, which allows purposive flows of knowledge and ideas in and out (Chesbrough, 2003). In a completely open setting, organisations combine knowledge exploitation and exploration to maximise the value of in-house expertise and capabilities. Implicitly, the ideas of open innovation suggest that there is a potential for improving network conditions for innovation and value creation by upgrading the skills of cooperation and opportunity recognition in individual businesses. They also indicate the benefit of strengthening the web of “untradeable interdependencies” in networks (Storper, 1997), which is seen as requisite for the development of contextualised knowledge and practices (Gertler, 2003). In consequence, knowledge becomes sticky or non-imitable (Szulanski, 1996), which results in competitive advantages for members of the network (Porter, 1998).

In line with the above arguments, some authors point out that the successful introduction of an open innovation strategy seems to be contingent on certain organisational qualities. As an example, Vanhaverbeke, Van De Vrande, and Chesbrough (2008) focus on the need to improve organisations’ absorptive capacity as an important aspect of innovation capability in organisations. Foss, Laursen, and Pedersen (2011) find that organisational adaptations, such as the delegation of responsibility and the introduction of incentives for knowledge sharing, are a prerequisite to obtain positive effects from open innovation. The broad, purposive involvement of employees in innovation work is thus seen as a premise for the success of more open innovation strategies. More specifically, Hewett (2005) claims that innovation is unlikely to occur if employees are not strongly involved in the problems to be solved and believe in the importance of the development work. Accordingly, all employees should develop knowledge about the processes of turning ideas into profitable

business (Kelley, 2010; Lindegaard, 2010). Lindegaard (2010) further suggests that the implementation of open innovation principles implies a need for employees to be able to manage relations with various external contributors.

Research on employee-driven innovation is based on an assumption that all employees have the potential for creative thinking, and will be able to contribute to innovation and change. The significance of employee involvement in innovation was substantiated as early as 1871, when the exploitation of ideas from employees was referred to as important to increase the quality and lower the costs of products (Tidd & Bessant, 2009). A century later, researchers, such as Stalk, Evans, and Shulman (1992) and Hamel and Prahalad (1994), stated that changes in competition put new demands on innovation effectiveness, which created a need for new work processes and new organisational structures. Their conclusion was that the purposive use of employees' knowledge, referred to as core competence, can and will result in increased innovation capacity. The premises emphasised as important for successful EDI are the increased awareness of the inherent innovation potential among both employees and leaders, and the introduction of systematic approaches to the general involvement of employees in innovation (Bessant & Caffyn, 1997, Hallgren, 2008; Høyrup, 2010; Smith, Kesting, & Ulhøi, 2008; Tidd & Bessant 2009). Although EDI is still a fresh concept, diverse definitions are emerging. An example is Smith et al. (2008, p.1), who claim that EDI is: "...the generation and implementation of novel ideas, products and processes originated by a single employee or by joint efforts of two or more employees."

Current research on EDI can be divided into two main strands. The first strand discusses the implications of EDI, which can be further divided into two categories. These are direct effects, such as product quality, productivity and aspects related to work environment, and indirect effects, including results related to business and social economics (Zwick, 2004). Surprisingly, within this strand of research documentation of the actual effects of EDI on innovation, capacity or value creation is limited (exceptions can be found, e.g., Belangér, 2000; Tidd & Bessant, 2009; Zwick, 2004). The predominant focus is on qualitative parameters, and few have actually tried to quantify the effects of EDI-practises. An explanation for this may lie in the complexity of such studies, which involve longitudinal analyses of larger numbers of factors that are often interrelated and that affect the outcome of innovation processes in different ways (Heller, Pusic, Strauss, & Wilpert, 1998). Hence, the task of identifying and separating EDI-effects from other conditions may be very complicated. Nevertheless, an increased focus on EDI is emphasised to be of importance as a basis for sustained competitive advantage (Heller et al., 1998; Kelley, 2010). Among the studies that substantiate this claim is the EPOC study (1997), which is based on answers from 6000 corporate managers from European countries. Nearly nine out of ten of these managers perceive a positive correlation between EDI and economic performance. Another line of studies, which include contributions from work research, suggest that the cultivation of internal qualities, like autonomy and collaboration, strengthens individual motivation and satisfaction (Axtell et al., 2000; Smith et al., 2008) and improves upon organisational measures like turn-over, quality of work and sickness absence (Black & Lynch, 2004; Kelley, 2010).

The second and most comprehensive strand of EDI-research addresses the conditions for EDI, which is related to organisational arrangements and organisational context (Byrne et al., 2009; De Jong & Kemp, 2003; Smith et al., 2008; Tierney, Farmer, & Graen, 1999). Studies on different levels, whether individual (Scott & Bruce, 1994), group (Paulus & Yang, 2000) or organisational (Byrne et al., 2009), all point out factors and conditions that are important for the initiation and development of EDI. Among the main factors identified is the importance of the recognition by management of the need to give priority to innovation, and to adapt for these processes through the generation, registration, evaluation and realisation of ideas. Other key factors are the collaborative climate between management and employees (Tierney et al., 1999; Wilkinson & Dundon, 2010), as well as the interaction between colleagues, and between employees and externals (Cummings & Oldham, 1997; Smith et al., 2008). Furthermore, the results of the studies indicate that work life traditions and marked conditions may influence whether, and how, employees are involved in innovation (Black & Lynch, 1996, 2001, 2004; Zwick, 2004).

The currently most comprehensive literature review to map factors that cause or affect the development of EDI-practices was performed by Smith et al. (2008). They identify four main factors that influence the potentiality of EDI: leader support, autonomy, cooperation and innovation climate. It is worth noticing that the authors also emphasise that the interpretation of these factors differs as the innovation process progresses. As an example, "leader support" is emphasised by the authors as the single most important condition for successful EDI. At an early stage of innovation, support and protection stand out as the main managerial responsibilities, while at later stages, management focus should shift towards resource allocation. Incidentally, this suggestion is supported by longitudinal studies of Norwegian companies (Gjelsvik, 2004). The second factor identified by Smith et al. (2008) is autonomy, which means the delegation of decision-making authority to employees, and the opportunity for them to perform their tasks without supervision or extensive control. Autonomy is emphasised as a significant enabler of innovation, particularly at the stages of idea generation and idea refining. Next, Smith and his colleagues argue that collaborative groups are generally more creative than individuals when it comes to the generation and exchange of new ideas. As with the previous factors, the stage of the innovation process

should also be taken into account when teams are formed. Group heterogeneity is seen as beneficial, or even requisite, at the early stages of innovation, whereas the later stages are more effectively supported by homogenous groups. Finally, Smith et al. (2008) point to studies that focus on organisational culture and identity, which indicate that employees also tend to look for signals of appropriate behaviour in the explicit and implicit norms in their organisations regarding the employees' involvement in innovation. Moreover, organisational climate is shown to play an important role in innovation capacity in organisations, notably at later stages of the innovation processes and in connection with disruptive innovation (Axtell et al., 2000). The latter claim is explained by the fact that disruptive innovation involves a substantial departure from established routines, as it is potentially resource-demanding and in need of long-term support from leaders and colleagues (De Jong & Kemp, 2003). Organisational climate is also emphasised as an important aspect of High-Involvement Innovation (HII), a concept originally framed by Bessant and Caffyn (1997). Tidd and Bessant (2009) describe the implementation of HII as a five-step process, in which the last step implies an organisation in which learning and continuous development through the broad involvement of employees is core.

In many aspects, HII and EDI are concurrent ideas, which also suggests that employee involvement will predominantly result in incremental innovation. However, the general involvement of employees in innovation may also lead to a higher degree of diversification and flexibility than that which occurs in organisations in which innovation processes are carried out by a limited group of people (Bessant, 2003; Hallgren, 2008).

The relationship between EDI and open innovation does not seem to have been addressed clearly and explicitly in earlier works in the innovation field, which may be because EDI appears to be a relatively new field of research (Høytrup, 2012). This does not mean that employees have not contributed to innovation in a historical perspective, but this kind of activity has typically been linked to research on employees' informal participation in organisational development (Tegelborg, Redien-Collot, Bonnafous-Boucher, & Viala, 2012). In this research tradition, employee involvement appears to be crucial to an organisations' further development (see, e.g., Klev & Levin, 2012). At the same time, this tradition represents a perspective in which knowledge is a key issue for organisations. In this perspective, we can find an indirect link between EDI and open innovation; relevant knowledge for innovation can be found, not just among the employees, but also among the customers or users, as well as among other organisations in the surroundings. These external actors are therefore also relevant to innovation activities. Høytrup (2010) divides approaches to innovation into what he calls "inner-directed" and "outer-directed" perspectives; the former can be associated with EDI, while the latter can be linked to open innovation, as Chesbrough (2003) uses the term. However, we can notice that Høytrup (2010, p. 153) indirectly links the two strands together so that the inner-outer dichotomy is implicitly exceeded when he applies a knowledge- and learning perspective on innovation: "The concept that innovation is the successful exploitation of new ideas implies a focus on knowledge processes as a basis for innovation and learning: the creation, interpretation, sharing and circulation of ideas and knowledge in the organization and across the boundaries of interacting organizations."

### **3 METHOD AND RESEARCH DESIGN**

The results in this paper are based on qualitative interviews with employees and leaders from 20 Norwegian enterprises. Cases were identified by the research team, based on their broad knowledge about Norwegian enterprises. As a main objective of the research was the identification of good practices for EDI, a "strategic and purposeful" selection was made (Flyvbjerg, 2006). Accordingly, cases were selected on the basis of expectations about their relevant information content. "Relevance" was evaluated on the basis of the reputation of enterprises for the profitable involvement of their employees in innovation work, as measured by employees' experiences of a positive work environment and leaders' affirmations of improved innovation capacity. A reference group that consisted of representatives from the Norwegian Ministry of Trade and Industry, The Norwegian Confederation of Trade Unions, and The Confederation of Norwegian Enterprise actively participated in the selection process.

The 20 case enterprises represented eight different industries; among them were contracting firms, manufacturing and processing industry, and software and service providers. Of the enterprises, 80% were from the private sector, and half of them had less than 250 employees. The choice of rather heterogeneous cases was made to increase the possible generalizability of results across cases (Schofield, 2002).

To conduct the interviews, an interview guide was developed on the basis of general innovation theory that describes overall innovation phases, as well as factors that have been previously identified as important for employee-driven innovation (De Jong & Kemp, 2003; Smith et al., 2008; Tierney et al., 1999). The interview guide (see Appendix 1) represented a general script for the interviews (Kvale & Brinkman, 2009) and functioned as a main thematic structure for the interviews. Within this overall structure, the specific topics that were discussed varied based on organisational characteristics and the experiences of the informants. The informants were given the freedom to elaborate on the specific topics that they wished to emphasise in the interview. In Morgan's (2012, p. 163) terms, one might say that the interviews were a cross between "content-oriented and conversation-oriented."

A total of 48 informants were involved in the 20 interviews that constitute the empirical basis of the research. With the exception of two interviews, semi-structured group interviews were carried out with the participation of two or three respondents, who represented employees, leaders and union representatives. In organisations with union representatives, the three groups were represented together in about 60% of the interviews. Group interviews were chosen because of the assumed advantage that informants would build on each other's experiences during the interview (Gaskell, 2000). Considering that the number of participants in each interview was two to four, these interviews can be conceptualised as "mini focus group" interviews (Krueger & Casey, 2009). All interviews were conducted by two researchers, so that one could take a more observational role in the situation. The duration of each interview was one to one and a half hours, and all interviews were recorded and transcribed.

Morrow (2005) states that the validity of qualitative inquiry depends on the analytical capabilities of the researchers. The analytic phase in this study was improved by an approach that can be referred to as "mutual construction of meaning between co-researchers" (Rismark & Sølvsberg, 2007) and consisted of two phases. First, the two researchers that conducted the interviews were jointly responsible for doing the preliminary content analysis. This involved the coding of data based on a pre-defined scheme, and a first round analysis based on the overall innovation phases and thematic factors that are important for EDI. Second, the results were shared and discussed among all (four) researchers. In both of these phases, the research team had open discussions about the coding practice, and thus, applied a "collaborative coding" procedure (Saldana, 2009) and considered the revision of codes (Miles & Huberman, 1994). The total process involved alternation between individual analysis and joint discussions based on empirical data and a broad theoretical understanding.

#### **4 FINDINGS**

As discussed, within the field of EDI research, the focus is on the conditions for and the implications of the general involvement of employees in innovation, respectively. The present research was designed to learn about successful EDI practices across industries, and a purposive selection of enterprises was made accordingly. The research focus was on what these enterprises actually do to profit from EDI, i.e., on important conditions for value-creating EDI-practices. We were, however, not able to pinpoint any "best practices" for EDI. On the contrary, this study suggests that EDI can be implemented and performed in various ways that may all meet expectations regarding improved innovation capacity. However, we also found that the case organisations did have some qualities in common, which can be categorised in three interrelated domains: 1) Performance of specific organisational roles, which are leaders, employees and (where present) union representatives; 2) Recognition of particular cultural characteristics that guide employees into certain patterns of thought and action; 3) Use of specific structural mechanisms, or tools, to encourage and facilitate EDI-practices. The latter domain may constitute the backbone of innovation work, given a productive interplay with the two other domains (Aasen, Amundsen, Gressgård, & Hansen, 2012). Furthermore, in most of the case organisations, the use of suitable tools represented a direct channel for capturing and developing ideas in cooperation, not only with their own employees, but also with their customers and external specialists. In line with Tidd and Bessant (2009), we found that the enterprises that have implemented the most practices for EDI reported the best results. An important premise for profiting from these practices was, however, that they were integrated as part of the daily work life, and were not based on voluntariness or imposed on top of pre-existing tasks.

As indicated, we found that enterprises that experience increased innovative capacity due to the exploitation of EDI-practices had a number of cultural characteristics in common. The characteristics were interrelated, which implies that efforts to change the nature of one of them probably would affect one or more of the others. The following nine cultural characteristics were identified among the 20 selected enterprises:

**Table 1: Cultural characteristics**

<b>Cultural characteristic</b>	<b>Description</b>
<b>“Commitment”</b>	In general, high commitment towards innovation among people who worked in the enterprises.  Willingness to make an extra effort for the workplace, and employees who are “passionate about their work.”
<b>“Cooperative orientation”</b>	Widespread belief that there is "agreement to cooperate" and that cooperation gives the best quality of innovation activity in the enterprise.  Cooperative climate between employees and management.
<b>“Pride”</b>	Pride in working for this particular enterprise (Typically expressed through statements about "well-being" and low "turn-over" in the workforce).  The enterprises have many "external suitors," in terms of people and other businesses that wish to cooperate in various areas.
<b>“Trust”</b>	Enterprises characterised by trustful relationships.  Trust typically expressed as a two-sided relationship: The leaders show trust in employees, while employees show trust in their leaders.
<b>“Tolerance”</b>	Enterprises characterised by the idea that "differences are valuable," i.e., a tolerance for diversity within the organisation.  A certain tolerance for error, due to reduced likelihood that employees choose to hide flaws.
<b>“Feeling of security”</b>	Knowledge sharing and different types of ideas are typically greeted positively in the enterprises, which seems to provide a sense of an environment in which "thinking aloud is permitted".  Employees do not think that the job will disappear on the basis of innovative proposals for improvement that provide efficiency.
<b>“Development orientation”</b>	Employees perceive improvement and innovation as an integral part of their jobs.
<b>“Openness”</b>	Openness in communication, internally and externally, e.g., through the use of various types of open forums (in which "disagreeing with the CEO is allowed").  Extensive access to documents relating to decisions.  Leaders typically practice an "open-door policy", i.e., it is easy for employees to make informal contact.
<b>“Autonomy”</b>	Employees have a high degree of influence in relation to the execution of various tasks.  Managers who delegate responsibility and employees who accept this responsibility.  Managers are not control-oriented in their role performance.

Another distinguishing feature of enterprises that benefit from EDI-practices was a continuous focus on idea capturing and idea prioritising. Idea prioritising generally involved decisions about work process improvement and minor technology adjustments, and more often than not, employees implemented such changes without consulting the management. In the cases in which idea realisation implied a need for more comprehensive use of resources, management participation in the decision processes was, however, essential. In light of the above, it is perhaps less surprising that the advantageous adoption of EDI-practices appeared to be closely related to the extent of employees’ knowledge about the enterprise, including financial and strategic aspects. A particular management challenge was thus related to the issues of information dissemination and knowledge exchange.

Enterprises generally supported their EDI processes with the aid of various tools. These were 1) manual tools, such as lists and forms, newsletters and information boards; 2) e-tools, such as software, social media, intranet and information screens; and 3) tailored processes and roles, such as systems and routines for idea capture and idea development, research projects and idea brokers. In addition, formal and informal meetings constituted important arenas for the development and realisation of good practices for EDI. Whether used independently or in combination, such tools were perceived to support the processes for employee participation in innovation. As already indicated, turning EDI-practices into profitable innovation, however, depended on a constructive interplay between management and employees' practices, organisational culture and suitable tools.

## **5 DISCUSSION**

The principal challenge discussed by all case enterprises was an apparently unsolvable tension between the need to uphold efficient operation and, at the same time, to innovate their products and processes. This suggests that the distinction between established operation and innovation will soon become blurred and that, implicitly, innovation is everybody's concern, although in different ways. The inherent opportunity in this development is that innovation processes are better aligned with the real needs of businesses. The fact that the general level of competence among employees is increasing also supports this, which implies a growing value-creating potential in most businesses. As value can be captured from internal sources quite easily, we agree with Menon and Pfeffer (2003) that the current comprehensive interest in external ideas and knowledge does appear to be somewhat paradoxical. It should be noted, however, that although this study was designed to capture good ways to involve a business's own employees in innovation, the innovation processes studied were not "closed." On the contrary, all of the case enterprises cooperated extensively with external partners, such as distributors, customers, researchers, consultants, contract workers, and even students and pupils. Moreover, many of them included external experts as part of their idea evaluation and development teams, and we were also given examples of internal ideas that had resulted in spin-off establishments. Enterprises also reported that focusing on the general involvement of employees in innovation had improved their overall ability to interact with various knowledge sources, and had made employees more open to change. Thus, it appeared that the implementation of EDI practices not only affected employees' skills as contributors in internal innovation initiatives, it also made an impact on their ability to benefit from external collaboration. We therefore propose that EDI practices are closely interwoven with practices associated with open innovation (van de Vrande et al, 2009).

Our proposal is in accordance with Lindegaard (2011), who suggests that, in practice, open innovation addresses bridging internal and external resources. Similarly, Dahlander and Gann (2008) claim that internal and external strategies for innovation cannot be seen as separate phenomena. As a consequence, employee-driven innovation should not be understood as the takeover of innovation initiatives by employees, nor is it limited to the encouragement of new ideas by management. Rather, the present study suggests that EDI includes various arrangements to support internal innovation initiatives from the entire organisation, as well as employees' participation in arenas in which input from people external to the organisation can be captured, developed and communicated.

As discussed in the previous section, the fundamentals of EDI can be defined by the following three interrelated elements: roles, tools and culture. Many of the cultural features that we found may be considered as relevant to the idea of open innovation. Perhaps the most obvious point is that the enterprises in question practice openness in internal and external communication. Other examples of "convergence" between features that seem to underlie the practice of EDI and open innovation are "orientation towards improvement and change," "openness to new ideas," and "relationships of trust and autonomy." In the majority of the cases enterprises, employees were expected to look beyond their own tasks and expertise, and to consider their possible contributions towards the intention and future development of the organisation. Diversity was generally seen as an advantage. Moreover, most of the organisations were characterised by comprehensive information exchange, creativity and tolerance for failure, which were all factors emphasised as important for organisational learning and innovation capacity. It is worth noticing that many of the leaders pointed out the necessity of communicating that "change does not mean that you will lose your job" as an essential success factor for EDI. It is, however, interesting to note that the pride that seems to be pervasive in organisations that practice EDI seems to be partly linked to the organisation's positive reputation in the environment, i.e., its attractiveness to jobseekers and other enterprises that seek cooperation.

Inevitably, cultural characteristics that are supportive of EDI cannot be "inserted" into an organisation by resolution. It is the competent execution of leadership, supported by the adoption of suitable processes and tools, which might lead to the emergence of the desired cultural qualities and long-term profit. There is thus no easy method to change the organisational culture toward a certain direction. Schein (2010) points out that those who want to work towards cultural change must first have insight into organisational change in a general sense. His argument is that cultural change rarely works as an end in itself, but that the reason that the management of a business wishes to implement organisational change is to reach certain new goals or to solve certain specific challenges that it faces. Based on this, he gives the following advice for working toward cultural change: "The

change goal must be defined concretely in terms of the specific problem you are trying to fix, not as ‘cultural change’” (Schein, 2010, p. 311). It is only when these goals are clearly formulated that one should make an assessment of whether the culture will support or hinder the efforts for change. Schein suggests a cultural analysis having 10 steps that can be conducted to make this assessment.

Alvesson (2013) has a somewhat different approach to changing organisational culture and refers to cultural change as a “renegotiation of meaning.” Nor are we addressing large planned intentional cultural change projects here. Rather, it is assumed here that the changes are driven by certain key actors, usually managers, informal authority figures and small groups. The changes are not considered to be the result of campaigns and the like, but rather, as gradual changes through informal social interaction. In other words, the main actors primarily have an impact only on the people with whom they are in direct contact. Alvesson and Svenningsson (2008) give some relevant strategic advice regarding working toward cultural change. Some of the key strategies for cultural change on which they focus are the significance of having a long-term perspective, persistent management attention, the formulation of moderate goals, and the performance of management with a receptive and dynamic attitude during the working process.

We found that a particular challenge was related to the issue that the full potential of EDI practices may not be measurable in the short term. Quite a few of our respondents mentioned relatively long periods of transition that were characterised by employees’ frustration and anger, experiences of insecurity, and even by declining profits, before changes towards the increased involvement of employees in innovation were implemented. Accordingly, a fundamental condition for the successful implementation of EDI practices and the improved exploitation of open innovation is that the top management shares a genuine conviction that they are an essential strategy to build innovation capacity. Among the important means suggested to facilitate the transition towards EDI was managers’ delegation of authority (but also, the capacity of employees to pick up the ball and run), an adaption for collaboration across departments, businesses and tasks, an appreciation of enthusiasm, and the highlighting of accomplishments, small or large.

In spite of the above objections, there was a general agreement between leaders and employees that, over time, EDI practices resulted in widespread cooperative and creative skills. Specifically, employees’ interest in innovation opportunities and in their own roles in such processes was strengthened. In addition, they also showed increased attention towards the significance of such processes to create and maintain a productive and profitable workplace. For “everybody” to be able to work across internal and external borders, employees needed, however, to understand how diversified thinking could be of use to the enterprise. One of the fundamental conditions to encourage this situation was a mutual will to share information, whether it addressed financial or strategic developments, emerging opportunities, or problems in need of attention. Of relevance in this context is the discussion by Huizingh (2011) regarding internal context characteristics as determinants of open innovation effectiveness. These characteristics include company demographics and strategic orientation, but with reference to Harison and Koski (2010), he claims that “even employee characteristics may matter” (Huizingh, 2011, p. 5). This is indeed in line with our view, which is that the one thing everyone can influence is the way in which they perform their roles. Accordingly, it appears that a basic condition for the successful exploitation of open innovation practices is that all employees must have the necessary competence to contribute as needed, which is the essence of EDI.

To ensure the necessary flow of information and the establishment of connections between opportunities, ideas, needs and problems, the case enterprises used various approaches. In small organisations, it appeared sufficient to ensure that internal and external networks were well-developed, while in larger enterprises, the purposive fostering of “network-nodes” was needed. An example of this approach can also be found in Whelan, Parise, de Valk, and Aalbers (2011), whose focus is the combination of external ideas with internal competence. They suggest that the roles of “idea scouts” and “idea connectors” are both needed to find and connect ideas, and that the performance of these roles influences the capacity of enterprises to produce successful open innovation outcomes. We find that, in large organisations, these roles are just as important to support the internal flow of information across divisional and professional borders. A potential challenge with respect to this is that, as the amount of cooperation or “network-nodes” increases, the overall complexity does as well, which means that additional means of coordination may be needed.

As indicated, enterprises that have successfully implemented EDI practices pointed out that an important effect was an increased openness to change among employees. This could be seen as further support for open innovation, which can be understood as addressing the management of change. However, we also found that truly working within an EDI paradigm not only impacted the attitudes of employees, but also those of leaders. To succeed, leaders had to change the way in which they interacted with employees and move towards the role of “coaches” or “conversation partners.” The difficult part of this, many of them admitted, was letting go of traditional control mechanisms. The general management experience was, however, that a feeling of security increased when they were leading in an EDI environment because the majority of the employees assumed responsibility for change and innovation. Still, a particular management challenge was related to the task of evaluating the effects of EDI practices. As established by Heller et al. (1998), the introduction of new



participation practices is often assumed to lead to an actual change of practice, which is followed by improved productivity and competitive powers. If, however, measures indicate that productivity has not improved, this may mean either that practice has not changed after all, or that practice has changed, but has not resulted in the expected benefits. This means that the assessment of EDI practices should include measurements of the effects on work practice, productivity and innovation. As already indicated, such measurements may be demanding, and the outcome may also be influenced by other factors, such as market fluctuation, disruptive technology or concurrent initiatives, including competence training or the introduction of new technology.

Finally, our empirical evidence indicates that the role of working management is of particular importance in this context. The working manager (i.e., the foreman, group leader, middle manager, etc.) is the individual who is the closest to the daily operations, and therefore, the one who should have the everyday responsibility to capture ideas and suggestions for improvement. We further found that the working manager was crucial in inspiring and motivating employees to show initiative, offer ideas and connect with external knowledge sources. The role of the working managers as part of EDI was not without challenges. As an example, to perform their role as needed within the EDI paradigm, many of these people had to substantially extend their knowledge of the business outside their area of specialisation. In addition, they had to master the demanding combination of performing their jobs as skilled workers and as capable leaders at the same time.

## **6 CONCLUSION**

Although challenging, it is our claim that EDI is an underexplored opportunity in many enterprises as a means of improving the overall capacity for innovation. Specifically, EDI results in a more general interest in improvement among employees, increased engagement in innovation processes, and reduced opposition to change. Moreover, the systematic introduction of EDI practices also appeared to increase the ability of enterprises to exploit open innovation principles. Our general suggestion, therefore, is that organisations interested in pursuing open innovation should start by evaluating their EDI practices. This implies an assessment of their present situation, with a focus on collaborative climate, information exchange, delegation of decision-making powers, and established meeting arenas. The next step would then be to consider organisational moves that can be made to support the development of good EDI practices. This includes the encouragement of a culture of co-operative innovation effort, and the evaluation of existing tools and structures to determine which of them are best suited to support the desired development, and which are not. Finally, it should be acknowledged that genuinely moving work practices towards EDI may imply significant changes in the way that people work together, including management practices. This means that the full potential of EDI may not be realised overnight.

Because this study was conducted in Scandinavia, with its possibly distinct traditions of employee involvement, we would like to make some remarks regarding the possible limitations of the generalisation of results to other contexts (countries, regions) with different models of employee participation. One could easily state that the Scandinavian model of cooperation and participation in working life represents a convenient framework for the development of EDI. A number of the same factors that have a positive impact on EDI are identical to some of the characteristics that are associated with the Scandinavian model: high-trust-organisations, broad involvement of employees and a cooperative climate between management and employees (including union representatives). However, we have no reason to believe that this overlap makes our findings irrelevant for organisations in other regions. The cultural characteristics of organisations that work with EDI principles can be seen as rather general, and might thus be considered as relevant for many different contexts.

A shortcoming of the present study is that it did not focus on human resource management. During the analytical phase, we realised that, although a few respondents touched on the subject by mentioning development discussions and post-experience courses, future research should explicitly address this topic. Furthermore, to better understand the long-term implications of EDI practices and the conditions affecting such processes, extended qualitative knowledge is needed. Relevant research questions are how EDI practices differ across industrial and national borders; how organisational category and size, as well as markets and other external conditions, affect EDI practices; and the relation between EDI practices and open innovation. Finally, we suggest that longitudinal studies should be accompanied by quantitative documentation of effects, on both the organisational and the societal levels.

## **REFERENCES**

- Aasen, T. M., Amundsen, O., Gressgård, L. J., & Hansen, K. (2012). In search of best practices for employee driven innovation: Experiences from Norwegian work life. In S. Høyrupe, M. Bonnafous-Boucher, C. Hasse, M. Lotz, K. Møller (Eds.), *Employee-driven innovation: A new approach* (pp.57-76). London: Palgrave Macmillan.
- Alvesson, M. (2013). *Understanding organizational culture* (2nd ed.). London: Sage Publications.

- Alvesson, M., & Svenningsson, S. (2008). *Changing organizational culture. Cultural change work in progress.* London: Routledge.
- Axtell, C. M., Holman, D. J., Unsworth, K. L., Wall, T. D., Waterson, P. E., & Harrington, E. (2000). Shopfloor innovation: Facilitating the suggestion and implementation of ideas. *Journal of Occupational and Organizational Psychology*, 73, 265-285.
- Belang r, J. (2000). The influence of employee involvement on productivity: A review of research. R-00-4E, Human Resource Development Canada.
- Bessant, J., & Caffyn, S. (1997). High-involvement innovation through continuous improvement. *International Journal of Technology Management*, 14(1), 7-28.
- Bessant, J. (2003). *High involvement innovation.* Chichester: John Wiley.
- Black, S., & Lynch, L. (1996) Human capital investments and productivity. *American Economic Review*, 86(2), 263-267.
- Black, S., & Lynch, L. (2001). How to compete: The impact of workplace practices and information technology on productivity. *Review of Economics and Statistics*, 83(3), 434-445.
- Black, S., & Lynch, L. (2004). What's driving the new economy?: The benefits of workplace innovation. *The Economic Journal*, 114(493), 97-116.
- Boer, H., & Gertsen, F. (2003). From continuous improvement to continuous innovation: A (retro)(per)spective. *International Journal of Technology Management*, 26(8), 805-827.
- Byrne, C. L., Mumford, M. D., Barrett, J. D., & Vessey, W. B. (2009). Examining the leaders of creative efforts: What do they do, and what do they think about? *Creativity and Innovation Management*, 18(4), 256-268.
- Caloghirou, Y., Kastelli, I., & Tsakanikas, A. (2004). Internal capabilities and external knowledge sources: Complements or substitutes for innovative performance? *Technovation*, 24, 29-39.
- Chesbrough, H. W. (2003). *Open innovation: The new imperative for creating and profiting from technology.* Boston, MA: Harvard Business School Press.
- Chesbrough, H. W., Vanhaverbeke, W., & West, J. (Eds.). (2006). *Open innovation: Researching a new paradigm.* Oxford: Oxford University Press.
- Cummings, A., & Oldham, G. R. (1997). Enhancing creativity: Managing work contexts for the high potential employee. *California Management Review*, 40(1), 22-38.
- Dahlander, L., & Gann, D. (2008). How open is innovation? In: J. Bessant & T. Venables, (Eds.) *Creating wealth from knowledge. Meeting the innovation challenge* (pp.61-79). Cheltenham: Edward Elgar Publishing.
- De Jong, J. P. J., & Kemp, R. (2003). Determinants of co-workers' innovative behaviour: An investigation into knowledge intensive services. *International Journal of Innovation Management*, 7(2), 189-212.
- European Foundation for the Improvement of Living and Working Conditions. (1997). *EPOC - Employee direct Participation in Organisational Change. New Forms of Work Organisation: European Research Report.* ISBN 92-828-1888-8.
- Flyvbjerg, B. (2006). Five misunderstandings about case-Study research. *Qualitative Inquiry*, 12(2), 219-145.
- Foss, N. J., Laursen, K., & Pedersen, T. (2011). Linking customer interaction and innovation: The mediating role of new organizational practices. *Organization Science*, 22(4), 980-999.
- Gaskell, G. (2000). Individual and group interviewing. In M. W. Bauer & G. Gaskell (Eds.), *Qualitative researching - With text, image and sound* (pp.38-56). London: Sage.
- Gertler, M. S. (2003). Tacit knowledge and the economic geography of context, or the undefinable tacitness of being (there). *Journal of Economic Geography*, 3(1), 75-99.
- Gjelsvik, M. (Ed.) (2004). *Radikale innovasjoner i etablerte foretak.* Bergen: Fagbokforlaget.
- Hallgren, E. W. (2008). *Employee driven innovation: A case of implementing high-involvement innovation* (Unpublished doctoral thesis). Technical University of Denmark.
- Hamel, G., & Prahalad, C. K. (1994). *Competing for the future.* Boston: Harvard Business School Press.
- Hargadon, A. (2003). *How breakthroughs happen. The surprising truth about how companies innovate.* Boston, MA: Harvard Business School Press.
- Harison, E., & Koski, H. (2010). Applying open innovation in business strategies. Evidence from Finnish Software Firms. *Research Policy*, 35(7), 953-969.
- Heller, F., Pusic, E., Strauss, G., & Wilpert, B. (1998). *Organizational participation: Myth and reality.* Oxford: Oxford University Press.

- Hewett, T. T. (2005). Informing the design of computer-based environments to support creativity. *International Journal of Human- Computer Studies*, 63(4-5), 383-409.
- Huizingh, E. K. R. E. (2011). Open innovation: State of the art and future perspectives. *Technovation*, 31(1), 2-9.
- Høyrup, S. (2010). Employee-driven innovation and workplace learning: basic concepts, approaches and themes. *Transfer: European Review of Labour and Research*, 16, 143-154.
- Høyrup, S. (2012). Employee driven innovation: A new phenomenon, concept and mode of innovation. In S. Høyrup, M. Bonnafous-Boucher, C. Hasse, M. Lotz, K. Møller (Eds.), *Employee-driven innovation: A new approach* (pp.3-33). London: Palgrave Macmillan.
- Kelley, B. (2010). *Stoking your innovation bonfire*. Chichester: Wiley
- Klev, R., & Levin, M. (2012). *Participative transformation. Learning and development in practising change*. Gower Publishing.
- Krueger, R. A., & Casey, M. A. (2009). *Focus groups: A practical guide for applied research* (4th ed.). Thousand Oaks, CA: SAGE Publications.
- Kvale, S., & Brinkman, S. (2009). *Interviews: Learning the craft of qualitative research interviewing* (2nd ed.). Thousand Oaks, CA: SAGE Publications.
- Lindegaard, S. (2010). *The open innovation revolution: Essentials, roadblocks, and leadership skills*. Hoboken, NJ: Wiley.
- Lindegaard, S. (2011). *Making open innovation work: @lindegaard to big and small companies: You need to open up your innovation efforts!* Seattle, WA: CreateSpace.
- Menon, T., & Pfeffer, J. (2003). Valuing internal vs. external knowledge: Explaining the preference for outsiders. *Management Science*, 49(4), 497-413.
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook*. Thousand Oaks, CA: Sage Publications.
- Morgan, D. L. (2012). Focus groups and social interaction. In J. F. Gubrium, J. A. Holstein, A. B. Marvasti & K. D. McKinney (Eds.), *The SAGE handbook of interview research* (pp.161-76). Thousand Oaks, CA: SAGE Publications.
- Morrow, S. L. (2005). Quality and trustworthiness in qualitative research in counseling psychology. *Journal of Counseling Psychology*, 52(2), 250-60.
- Paulus, P. B., & Yang, H.-C. (2000). Idea generation in groups: A basis for creativity in organizations. *Organizational Behavior and Human Decision Processes*, 82(1), 76-87.
- Porter, M. E. (1998). Clusters and the new economics of competition. *Harvard Business Review*, 76(6), 77-90.
- Powell, W. W. (1998). Learning from collaboration: Knowledge and networks in the biotechnology and pharmaceutical. *California Management Review*, 40(3), 228-240.
- Rismark, M., & Sølvsberg, A. M. (2007). Effective dialogues in driver education. *Accident Analysis and Prevention*, 39, 600-605.
- Saldana, J. (2009). *The coding manual for qualitative researchers*. Los Angeles: Sage Publications.
- Schein, E. H. (2010). *Organizational culture and leadership* (4th ed.). San Francisco: John Wiley & Sons.
- Schofield, J. W. (2002). Increasing the generalizability of qualitative research. In A. M. Huberman & M. B. Miles (Eds.), *The qualitative researcher's companion*. Thousand Oaks, CA: Sage.
- Scott, S. G., & Bruce, R. A. (1994). Determinants of innovative behavior: A path model of individual innovation in the workplace. *Academy of Management Journal*, 37(3), 580-607.
- Smith, P., Kesting, P., & Ulhøi, J. P. (2008). What are the driving forces of employee-driven innovation? Paper presented at the 9th International CINet Conference, Valencia, Spain, September 2008.
- Stalk, G., Evans, P., & Shulman, L. E. (1992). Competing on capabilities: The new rules of corporate strategy. *Harvard Business Review*, March-April 1992, 57-69.
- Storper, M. (1997). *The regional world: Territorial development in a global economy*. New York, NY: Guildford Press.
- Szulanski, G. (2003). *Sticky knowledge. Barriers to knowing in the firm*. London: Sage Publications.
- Tegelborg, A.-C., Redien-Collot, R., Bonnafous-Boucher, M., & Viala, C. (2012). Employee-driven innovation: Operating in a Chiaroscuro. In S. Høyrup, M. Bonnafous-Boucher, C. Hasse, M. Lotz, K. Møller (Eds.), *Employee-driven innovation: A new approach* (pp.34-56). London: Palgrave Macmillan.

- Tidd, J., & Bessant, J. (2009). *Managing innovation. Integrating technological, market, and organizational change* (4th ed.). Chichester: Wiley.
- Tierney, P., Farmer, S. M., & Graen, G. B. (1999). An examination of leadership and employee creativity: The relevance of traits and relationships. *Personnel Psychology*, 52, 591-620.
- Van De Vrande, V., De Jong, J. P. J., Vanhaverbeke, W., & de Rochemont, M. (2009). Open innovation in SMEs: Trends, motives and management challenges. *Technovation*, 29 (6-7), 423-437.
- Vanhaverbeke, W., Van De Vrande, V., & Chesbrough, H. W. (2008). Understanding the advantages of open innovation practices in corporate venturing in term of real options. *Creativity and innovation management*, 17, 251-258.
- von Hippel, E. (1988). *The sources of innovation*. New York, NY: Oxford University Press.
- von Hippel, E. (2005). *Democratizing innovation*. Boston: MIT Press Books.
- Whelan, E., Parise, S., de Valk, J., & Aalbers, R. (2011). Creating employee networks that deliver innovation. *MIT Sloan Management Review*, 53(1), 37-44.
- Wilkinson, A., & Dundon, T. (2010). Direct employee participation. In A. Wilkinson, P.J.Gollan, M. Marchington & D.Lewin (Eds.), *The Oxford handbook of participation in organizations* (pp. 167-185). New York: Oxford University Press.
- Zwick, T. (2004). Employee participation and productivity. *Labour Economics*, 11(6), 715-740.

## **APPENDIX 1: THEMATIC INTERVIEW GUIDE - ORGANIZED BY INNOVATION PHASES**

Instruction: This guide represents a general script for the interviews, and function as a main thematic structure of the interview. The informants should be given the freedom to elaborate on the specific topics that they wish to emphasize in the interview.

### **Idea generating phase**

Questions:

How is the work for discovering / identifying ideas organized?

Do you use aids / tools for discovery and promotion of ideas among the employees?

Can you tell the story of the most successful handling of an idea you had?

What were the reasons why it was successful?

### **Selection phase**

Questions:

What criteria / tools are used when ideas are prioritized, and what roles have the employees in this work?

What are the essential conditions for the successful use of employee skills in this phase?

Can employees influence the decision rules for prioritization? And how is this eventually done?

What information do employees have access to in this field?

### **Development phase**

Questions:

How is the development phase planned and conducted, and what are the roles of the employees in this work?

How is the balance between daily operations and development handled?

### **Implementation phase**

Questions:

How is the implementation (e.g. marketing / sales) planned and conducted, and what role do the employees have in this work?

How do you encourage input from employees, and how do you handle this input?