SELECTING AND DEVELOPING ORGANIZATIONAL ROUTINES TO SUPPORT INNOVATION

ABSTRACT

Creating conditions conducive to innovation requires companies to consider a broad range of aspects and not the least identifying and implementing new processes and routines. The purpose of this paper is to address what innovation routines are selected and developed in a company with the ambition to involve a broad base of its employees in innovation. It investigates the similarities and differences of organizational routines selected in four different units in a large global R&D organization and analyses reasons to and consequences of these differences. The study shows that how innovation is regarded in an organization will play an important role, that addressing innovation as a process is critical and that the conflicts emerging when people strive to create new routines that largely deviate from normal operations can become a valuable source for innovation capabilities. By combining innovation management research with recent organizational routines literature this paper is able to identify some interesting patterns both when it comes to how innovation routines are selected and developed and when it comes to what routine characteristics can be more or less effectively combined to support innovation. The study aims to contribute to the emerging literature exploring intra-organizational evolution of ideas and routines.

Keywords: Innovation Management. Organizational routines. Innovation capabilities.

1. INTRODUCTION

The long-term focus on efficiency and speed in product development processes has caused a need in R&D organizations to learn how to better support generation and realization of novel ideas. The ultimate goal for a company with the ambition to become more innovative is to be able to deploy ways of working that enables a capability to repeatedly generate and implement innovation i.e. to embed and create innovation capabilities in the organization (Teece, 2007; Tushman and Nadler, 1986). In addition, making use of a broad base of employees to take initiatives that are aligned to a company’s existing strategy as well as outside of its scope is increasingly becoming a popular innovation strategy for many established companies (Birkenshaw et al. 2011; Kesting and Ulhoy, 2010; Bessant, 2003). The underlying reason is that this is believed to increase the probability for companies to successfully realise a portfolio of both radical and incremental innovations which is understood to be critical for short-term success as well as for adaptation and long-term survival (Dewar and Dutton, 1986). As a consequence innovation is seen to increasingly become subject to a larger degree of
professionalization and the management of innovation forms an expert function in itself, in many companies. Studies on how innovation capabilities are built in companies, i.e. what people responsible for creating conditions conducive to innovation focus on and how they implement new ways of working, are however much fewer in number in comparison to literature stipulating what characterises an innovative organisation or what factors leads to a single successful innovation outcome (Crossan and Apaydin, 2010). In addition, despite companies’ large investment in becoming more innovative and the vast amount of knowledge available on how to manage and organise for innovation, the majority of companies are seen to have a hard time in reaching their ambition (Booz & Company, 2013). Research on what deliberate actions managers and non-managerial employees take to build innovation capabilities and the consequences from these is thus of high relevance to both industry and academia.

Longitudinal empirical studies have shown that building capabilities to innovate requires the implementation of ways of working that contain many elements foreign (or even the opposite) to what is normally considered to be to “manage” an organization (e.g. van de Ven et al., 1989; Dougherty and Hardy, 1986; Tushman and Nadler, 1986). Innovation put demands on managers to at least temporarily purposefully increase levels of uncertainty and complexity and thus a higher degree of confusion, insecurity and frustration in people. Considering that innovation is a collective process the key for companies with an ambition to build innovation capabilities is to understand how to make people in their organization willing and capable to continuously innovate; it is people who recognize opportunities and “develops and implement new ideas by engaging in transactions with others within an institutional order” (Van de Ven, 1986).

Burgelman (1991) takes an intra-organizational perspective on the evolution of strategic initiatives or intrapreneurial activities inside a company. Three key situations or phases are identified to characterise the internal innovation process; the creation of variation corresponding to the recognition or creation of new ideas, the selection and development of initiatives by individuals or groups of employees and the retention to capture the learning from these initiatives by “translating” new ideas and insights to become accepted (or rejected) by management (Burgelman, 1991). He showed the importance for firms to encourage what he refers to as induced and autonomous initiatives, the former being initiatives inside and the latter those outside a company’s existing strategy in order to successfully adapt and survive. The processes and support needed for these types of initiatives differ. Autonomous initiatives are significantly different from induced ones when it comes to for instance technology involved and what customer needs or groups are targeted and these initiatives are many times triggered by opportunities external to the organization in contrast to the induced ones stemming from internal plans and road maps. Selecting what autonomous initiatives to allocate resources to and develop further are involving few rules and no clear evaluation criteria. Typically iterative and intense interactions between innovation champions and top management are needed to interpret the ambiguous and equivocal information
arising when autonomous initiatives evolve. Selection of induced initiatives is on the opposite facilitated by these being aligned with companies existing strategies.

This is in similar vein to the differences identified when generating and realizing incremental versus radical (e.g. Leifer et al., 2000; O’Connor and McDermott, 2006), disruptive innovations (Christenssen, 1997), discontinuous (Bessant, 2011) or strategic innovations (Berghman et al., 2013), defining the common attribute of these innovations as being outside the scope of a company’s strategies or business models. Incremental innovations on the other side are the result from a step-wise development of existing products, processes or offers and represent thus no deviation from existing strategies. Studies of how companies organise for strategy-deviating innovations show the need to implement new ways of working and interact in order to better manage the higher degree of uncertainty and dynamics characterising these innovations compared to when organising and managing incremental innovations (Bessant, 2011; Leifer et al., 2000). Building capabilities requires new ways of working to form bundle of organizational routines (Grant, 1997; Nelson and Winter, 1982). Literature show thus that innovation capabilities requires not only attention to a set of general innovation routines but rather to a broad range of diverse routines to support both initiatives aligned to a company’s current strategy or business models and those that deviate from the same.

The routine literature characterize organizational routines as recurrent interaction patterns i.e. repetitive, recognizable patterns of interdependent actions carried out by multiple actors (Feldman and Pentland, 2003). Innovation management literature is vast when it comes to identifying routines that act as barriers to innovation and questions whether routines for innovation are possible or not (Dougherty and Hardy; 1996; Leonard-Barton, 1992; Dougherty, 1992; Van de Ven, 1986; Nelson and Winter, 1982). Innovation is per se a questioning of status quo and is closely associated to change why the relationship between innovation and routine traditionally has been treated as incompatible. Further, the routine stream of literature has been largely occupied with studies aiming to define routines and on their impact on company-level performance rather than intra-organizationally or on a micro-level (Becker, 2004; Hodgson and Knudsen, 2004). More recent empirical studies of routines have however shown that routines are rather effortful accomplishments which are dynamic, generative and open to variations (Feldman, 2000; Feldman and Pentland, 2003). There will naturally be varieties when participants carry out the routine in practice or chose to alter it. How managers are selecting and developing routines in practice, not the least those aiming to stimulate variation to form innovations, is consequently largely dismissed.

The study aims to contribute to innovation management research by exploring how routines supporting both induced and autonomous initiatives are selected and developed in four different sites in an R&D organization in a global and successful high-technology company. The company has for about three years worked systematically on embedding innovation in the organization with an approach to involve a broad base of its employees in innovation. The studied units are naturally, as being R&D units,
characterized by a continuous development process of induced initiatives and the ambition is to increase also the number of autonomous initiatives. The study is based on interviews thoroughly investigating experiences and consequences from the deliberate work to support innovation in the company. Interviews have been complemented with participation in innovation activities and studies of internal related documents.

2. **EXPOSITION OF RESEARCH LITERATURE**

The literature exposition aims to identify what is known when it comes to how to deliberately build innovation capabilities to support employees to pursue both autonomous and induced initiatives in a mature company. The literature related to the generation and realizing of more or less novel ideas is elaborated on followed by literature on organizational routines to identify what factors to target when investigating how companies are supporting both autonomous and induced initiatives.

2.1 **CHALLENGES WHEN MANAGING INNOVATION**

Innovations should be novel in relation to something existing, with different degrees of novelty. The degree of novelty is in literature many times discussed in a scale from incremental to radical which describes its perceived magnitude of change and knowledge content; from smaller to larger changes reflecting the degree of new knowledge embedded in the innovation (Dewar and Dutton, 1986). For the most radical innovations this change is not only a matter of degree of variation but a complete deviation from existing structures or clear departure from existing practices (Ettlie, 1983) or a company’s strategies, value chains or business models (Christensen, 1997; Berghman, 2013). The most incremental innovations on the other side are simple improvements or adjustments of existing offers. Whether an autonomous or induced initiative will lead to a radical or an incremental innovation or any innovation at all or not can, however, not be completely foreseen or strictly planned as it is the actual outcome that is assessed.

Front-line managers and non-managerial employees are viewed as the most useful sources when it comes to identify and create new opportunities for a company (Burgelman, 1983; Bessant, 2003; Kesting and Ulhoy, 2010). It is, however, also recognized that not everyone is willing or capable to recognize an opportunity or develop solutions to meet an identified need; knowledge (and motivation) is unevenly distributed (Tsoukas, 1996). In addition, people tend to be more prone to focus on tasks they are familiar with. These are the reasons to why one of the key innovation management problems is related to creating human attention to innovation (van de Ven, 1986). The ability to unlearn, break through barriers of conventional thinking and to enable second-order learning i.e. to challenge core assumptions and meta-learning (Argyris, 1993) is considered the most critical skill to overcome obsolete mental models and routines and to generate more novel solutions (Sinkula, 2002). Breaking personal mental models (i.e. deeply held pictures of how the world works) and the underlying business models of a company are however argued to be among the hardest things to change (Brown, 1998). Dominant and familiar paradigms not the least in successful companies on how to address problems and what problems are considered worth solving reduce experimentation and the development of radically different processes and routines over time (Ahuja and Lampert, 2001). Existing routines become rigidities (Leonard-Barton, 1992) also because they have often large portion of tacit aspects
which makes them hard to spot and formulate (Francis et al, 2003). This is further emphasized when dealing with initiatives outside existing strategies and business models as lack of adequate technical and managerial knowledge often limits the capability of unlearning or second-order learning (Baker and Sinkula, 2002.) Most unlearning is found to need external triggers or shocks (Sinkula, 2002) and the ability to deliberately initiate unlearning and second-order learning is hard although critical for a company aiming to continuously support autonomous initiatives. Further large companies lack the ability of small companies, to motivate people who have novel and creative ideas (Stringer, 2000). Also, often creativity is not systematically managed as part of individuals or teams training or work processes (Feurer et al., 1996).

O’Connor and McDermott (2004) showed the importance to create mechanisms which link people who are skilled in recognizing a radical opportunity with those who can generate innovative solutions and drive the initiative forward as these seldom are the same individuals. Also, linking managers in different roles and hierarchical levels and linking managers to innovators (Day, 1994) is shown to be crucial. Radical innovation takes time and thus the same managers will most probably not be present the whole time required for it to reach the market (O’Connor and McDermott, 2006). Further, more strategy-deviating ideas require protection from managers in order to survive to the market (Dougherty and Hardy, 1996).

Evaluating and taking decisions to support more autonomous initiatives requires special attention to the selection and development of these as Burgelman (1983) showed in his study of Intel and which has been emphasized in studies of radical innovations (e.g. Leifer et al., 2000). Both due to companies aggressive revenue expectations and due to the pressure to predict plans and targets for radical opportunities despite the high level of uncertainty associated to these innovations and thus their long pay-back times (Gilbert, 2003; Christensen, 2008). Managers risk-aversion and a dominant market position making people unwilling to cannibalize their own investments and assets until it is too late add to the problems seen in the selection phase (Stringer, 2000; Foster and Kaplan, 2001; Perel, 2002). Bonuses and promotion criteria are dependent on project success and considering the high risk for more radical initiatives to fail, the incentive systems in place does not support the selection or the participation in these projects (Manso, 2011).

Research shows that stimulating deliberate learning (Zollo and Winter, 2002) is more effective than semi-automatic experience accumulation (Zollo and Singh, 2004) also when companies face new situations or are striving to radically change strategies (Lenox and King, 2004). Deliberate learning focuses on understanding the linkages between actions taken and the outcomes these leads to using interventions such as experiments or training (Arthur and Huntley, 2005; Nembhard and Tucker, 2011). For initiatives in line with strategy, retention of the learning outcomes are often well-developed processes using single-loop learning routines (Argyris, 1983) such as by using lessons learned and project documentation (Brown and Eisenhardt, 1997). When companies are facing more radical opportunities, such learning routines are found to be less effective both because these initiatives are undertaken much more seldom and as second-order learning and unlearning are increasingly called for.

Innovation is shown to be closely related to managing knowledge and learning to create new knowledge that can be transformed to create value (Nonaka, 1991; 1994). Generating new ideas have been shown to require an ongoing conversion of tacit knowledge difficult to express (Polany, 1967) to explicit organizational knowledge which is enabled by frequent sharing of
information and knowledge preferably in face-to-face meetings (von Krogh et al., 2000; Nonaka, 1994). Further, through the use of alternative approaches such as “serious play” to stimulate strategies and future scenarios (Roos et al., 2004), building physical spaces where tacit technical knowledge can be brought about through experimental prototyping (Brown, 2004). The process of innovation is thus commonly associated to an ongoing sharing and creation of new knowledge (Nonaka and Takeuchi, 1995). Since innovation is a collective effort it also typically requires the pooling and integration of knowledge from many different individuals (Amabile, 1988; Dougherty, 1992) As a consequence, creating new ways to socially interact and collaborate inside and outside an organisation is seen as an effective tool to enable creative solutions. Further, to make people become aware of and deal directly with customer problems and needs has been found characterize more innovative companies (Chesbrough, 2003) and to make people more prone to not only initiate but drive innovation (van de Ven, 1986).

2.2 ON THE SELECTION OF ACTIONS TO SUPPORT INNOVATION

Despite the numerous studies available on what is required to become innovative, most companies are found to struggle to make it happen. One reason is the conflicting result found in literature on how to organize and manage innovation (Lavie et al., 2010; Gupta et al., 2006; Tidd, 2001). Some argue that mature companies focus on replicating structures and routines and that innovation needs to be separated (Tushman and O’Reilly, 1997) or pursued through “heavyweight” projects (Eisenhardt and Tabrizi, 1995). Others claim that innovation needs to be integrated with other activities (Gibson and Birkinshaw, 2004) and that innovation naturally will emerge if people are given creative freedom (Kanter, 1983; Amabile and Conti, 1996). Some of these conflicting results can be explained by the neglecting of differentiating between radical and incremental innovation (Hemphälä and Magnusson, 2012).

However, also studies that do take in consideration whether it is about radical or incremental show conflicting results. Some find a high degree of formalization only supporting radical innovation (Cabello-Medina, 2011), whereas other show that formalization does have a positive effect only on incremental (Jansen et al., 2006). Incremental innovation is typically a result of more traditional top-down control and planning exercises but can also be a result of “naturally” cumulative changes (Tushman and Nadler, 1986) or by improvements identified bottom-up in an organisation (Bessant, 2003). These conflicts may be explained by the lack of studies taking in consideration innovation as a process i.e. that formalization may be useful in different phases and less in others. For instance, opportunities for radical innovation typically emerge from employee engagement and initiatives; skunk works (Peters, 1997), intrapreneurs (Menzel et al, 2007; Burgelman 1983) or bottom-up (Birkinshaw et al 2011; Smeds and Haho, 2003) but these opportunities are shown to require top-down support in later phases in order to make it to the market (Day, 1994).

Yet another explanation may lie in that these conflicting ideas on how to organize for innovation to a large extent arise from the separation in theory between social constraint and social action (Giddens, 1982) as suggested by Dougherty (2008). She shows how different organization theories tend to overemphasize one or the other when suggesting how to create conditions to support innovation even though social action and constraints are mutually constitutive; social action produces and reproduces social constraints while constraints enable action (Giddens 1979; Orlikowski 2000). Managerial implications based on social constraint
emphasize “boundaries and the need for forceful managerial actions and reward mechanisms
due to people’s limited cognitive abilities” (March and Simon, 1958 in Dougherty, 2008).
Social action approaches on the other side, emphasize that people have inner drive to act and are
inherently skilled in interacting with others so that improvisation and freedom rather than
authority and boundaries drives behavior (Giddens, 1982). Dougherty (2008) suggests alternate
organizational “construction principles” when building innovative organizations that take both
constraint and action theory in consideration and which reflect that peoples bounded rationality
and social competence are situational enacted i.e. depends on the situation of work.

Studies that take in consideration the different needs in different phases in an innovation process
and whether the actions taken are biased to social action or social constraints is here suggested
to have the potential to contribute to an increased knowledge on how companies support
employees in pursuing both autonomous and induced initiatives and the issues related to this.

2.3 ORGANIZATIONAL ROUTINES

Deliberately designing and implementing new ways of working is one dimension of
changing organizations. If employees repeatedly engage in their practices, more stable
work processes such as organizational routines may be developed (Orlikowski, 2000;
Feldman and Pentland, 2003). Organizational routines might be distributed in a
company and over time become embedded within the organization characterized by
tacit knowledge of how to accomplish context specific tasks (Dess and Shaw, 200).
Routines potential in providing companies with sustained and unique competitive
advantages have made and continue to make them attractive targets for organizational
studies (Nelson and Winter, 1982).

Routines have traditionally been perceived to be changed only as a result of a crisis or
external shock. Change through trial-and-error experimentation or through an
intentional search for better ways of working may also be possible but research has
shown that neither approach tend to lead to any larger changes in the routines. The
reason is a lack of systematization in the former and a too “local” search in the latter in
combination with the embeddedness of established routines in daily organizational
activity (Nelson and Winter, 1982).

More recent research based in empirical studies on a micro-level has however shown
that routines are much more dynamic and continuously developed “as a result of
participant’s reflections on and reactions to various outcome of previous iteration of the
routine” (Feldman, 2000 pp.). Organizational routines are conceptualized as having
three dimensions or aspects; an ostensive aspect which is the representation or the
abstract idea of a routine; a performative which is its expression in concrete action and
artifacts such as guidelines, templates, IT-tools, maps, objects etc.. The artefacts
associated to a routine can play a more or less important role in motivating and guiding
actors when carrying out a routine; either as proxies for the ostensive aspect of the
routine (Pentland and Feldman, 2005; D’Adderio, 2008) or as embodiment of certain
views of preferred ways of working. However the role of artefacts in routines is not well understood (Labatut, 2012).

The interaction between the ostensive aspect and its expression in concrete action (i.e. its performative aspect) stimulates the development of an organizational routine and ensure that a routine is not becoming “living dead’s” i.e. a routine that remain only an abstract idea or a repetitive action which do not bring any value (Pentland and Feldman, 2005). This means that routines are developed when people make use of the routine in practice and reflect about its usefulness. How companies go about to do this in practice requires however more attention. Pavlov and Bourne (2011) suggest in a conceptual model that using performance measurement, a commonly used management control system in companies might support a continuous development of organizational routines. Measuring performance triggers, guides and intensifies changes in the routines by stimulating the interaction between the ostensive aspect of the routine and its expression in concrete action through continuous iterations between the reflection and action of people involved in the execution of a routine (Feldman, 2000). If this model is valid also for other management controls and their interaction with innovation routines has however not been evaluated or conceptualised. It does however indicate an interesting link between management controls and routines which is considered to be worth investigating further.

Organizational routines are never enacted in a vacuum (Feldman and Pentland, 2003) but are interlinked and enacted simultaneously with other structures such as culture (Howard-Grenville, 2005) and patterns of coordination or relationships between groups (Feldman, 2000). The more a routine overlaps with other structures in an organization the more embedded it can be considered (Sewell, 1992). This can support the development of or implementation of new routines but these structures can also become barriers and provide difficulties for the actors to (Zbaracki and Bergen, 2010; Howard-Grenville, 2005; Dougherty, 1992) especially if the altered or new routines “may have conflicting claims and empowerments” (Sewell, 1992, p. 16).

Organizational routines are thus specific to the context and are not very easily replicated. It has however been shown that it is not necessarily the tacitness of the routines that allows firms to capture value from them but the ongoing use of them (Becker, 2004). Routines that have been acquired more recently and routines that are practiced less often makes a routine more prone to crumble (Weick, 1993). Under high uncertainty, simple non-codified routines and a dependence on people over process is required (Eisenhardt and Martin, 2000). There is nevertheless a tendency for companies to seek systematic, repeatable and far from simple processes and routines and to underestimate individual action and collaboration which risks to not enough allows for situation specific experimentation and learning when realizing radical opportunities (van den Ven et al., 1989). Also, simple or semi-structured routines which are infrequently used are easily forgotten why firms need to create mechanisms to hinder this.
Extant literature on innovation and routines tends to focus on the conflicts between organization’s routines and strive for stability with the ability to be creative and constant change and basically imply that innovation and routines are incompatible. The underlying assumption is that organizational routines need to be overcome in order for innovation to flourish (Dougherty and Hardy, 1996; March, 1991). In addition, it is questionable if innovation work practices can become routinized or even should be, to be effective. Another picture emerges if routines are viewed as actually dynamic and generating a varied outcome depending on how, where and by whom it is carried out in practice. Whether companies are striving and succeeding in developing effective innovation routines and if there are any better or worse ways to do that require empirical investigations.

Based in the literature a need to better understand how companies are selecting and developing routines for both autonomous and induced behavior is emerging. Of particular value is to identify if some bundle of routines and characteristics are more effective than others to support autonomous and induced behavior in large mature companies.

Consequently, the following research questions provide the basis of the design and analysis of the empirical study presented in this paper:

RQ1: What innovation routines are selected and developed to support employees in pursuing both autonomous and induced initiatives?

RQ2: How does the approach in selecting and developing innovation routines differ among units that are more or less successful in involving a broad base of employees in both autonomous and induced initiatives in a R&D organization?

3. METHOD AND EMPIRICAL SETTING

The technology leadership of the studied world-leading company has been and remains an important element in its business strategy along with increasingly strong focus on services. Customers as well as its more than 100,000 employees are found in 180 countries. The head-quarter is located in Stockholm, Sweden and about 25,000 people work in R&D, divided into three main organizations further divided into a large number of units spread geographically.

In 2010, the company initiated an initiative to boost innovation due to increased competitive pressure. In the overall strategy, innovation is broadly defined as realizing and creating value of ideas in different areas, i.e. new technologies, products, services, business models and internal processes. The strategy emphasizes that innovation is to involve all employees. To source ideas broadly in the front-end, both internally and externally, implementation of new IT-technologies supporting the sharing of
information and ideas and the establishment of a network of innovation coaches and managers are examples of measures taken in order to create conditions to support innovation. R&D has also a more traditional role in innovation as their work conventionally has been considered as innovation. Formal processes are deployed in the development of new values to customers and the process perspective of innovation is a natural part of considering innovation.

The study was performed in four different R&D units in the company. Two main sources were used to gather data: 27 interviews and the documents produced related to the planned efforts to support innovation in the units.

3.1 UNIT AND RESPONDENTS SELECTION
Selection of units was made in collaboration with a company innovation manager and from the results of an internal survey made on employee perception of their unit’s innovativeness. Unit D was selected as it was found to excel in the internal survey in contrast to the other three units. The differences in level of commitment in the other units were based on the innovation manager’s perception. This was based on the number of people engaged in formal activities related to innovation supporting activities and to what extent people are active in sending in new ideas using the formal idea management tool implemented. The level of formalization is based on to what extent the unit members have specific roles and whether special organizational arrangements dedicated to foster innovation were made. Other contextual differences are visualized in Table 1.

The principle for respondent selection was mainly the representativeness of respondents with elements of availability and a chain effect where respondents pointed towards new respondents (Bryman, 2007). 24 out of the respondents were responsible for the design and implementation of work practices and fostering of innovation. In addition, two respondents from the research department and one respondent from the product management organization were interviewed. Several of the respondents became informants at recurrent occasions providing complementary data and checking discrepancies coming from multiple sources. Furthermore one of the authors visited and participated in innovation fostering activities in three of the units on several occasions.

3.2 INTERVIEWING
Qualitative interviews were chosen as major data collection method as a way to reconstruct events to support innovation in the company was requested (Bryman, 2007). Each formal interview lasted for between 45-70 minutes and was recorded (with a few exceptions when the respondent preferred not to) and transcribed. The questions followed a semi-structured guide and were focusing on actions and practices in use to support innovation, how this was organized and followed-up on, as well as respondents perceptions on challenges and performance related to the work to support innovation.
### 3.3 Analysis

Transcribed interviews were analyzed in several steps, interpreting the meaning of the interview material into different codes (Kvale 1990); an open coding took place in addition to a coding directed by the preset guide and research questions. Data were reduced into categories and displayed in numerous tables, whereof several are reported in following sections. These displays have been an important part in the analysis: the reduction of data, the active work of displaying data and the iterative communication between the authors form the major elements for allowing the final verification and conclusion drawing, see analysis elements as stated by Miles and Huberman (1994). In categorization, ways to organize the innovation fostering activities in the units were firstly identified and further categorized according to their level of formalization. Secondly, the overall approach along with the attitude towards innovation as expressed by the respondents in the different units, were identified and critically analyzed in order to find whether social actions or social constraints were dominating. Thirdly, the activities that were found recurrent and collaborative i.e. the organizational routines were identified and further categorized according to what phase in an innovation process these were targeting. The categorization has been complemented by information from the documents collected in the research process and specifically facts upon measures taken and related communication efforts on the intranet has been important in complementing the picture derived from interviews.

### 3.4 Describing the R&D Units

The key characteristics of the four different units are summarized in Table 1.

The majority of the people in each R&D unit work in teams of about 20 people in the development department with a responsibility to realize new features and products. The front-end activities have a low-level of formalization compared to the development process. The advanced technology group with senior engineers and experts develop new technologies into demonstrators and prototypes and has an ability to explore radical ideas also managing numerous interfaces to other functions. The research organization serves the R&D organization with new knowledge in diverse technology areas. The product management represent a function bringing in the business aspects with a strong customer focus.

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<th>General information</th>
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4. **EMPIRICAL RESULT**

4.1 **NEW INNOVATION ROUTINES**

The routines identified in the different units are summarized in Table 2. The purpose and expected outcome for each routine are outlined as is its supportive structures and linkages to other routines in the unit. The routines in each unit and the experiences from the planned effort to support innovation are elaborated in the following section.

4.1.1 **UNIT A**

The planned effort to foster innovation in unit A is dominated by arranging a yearly idea contest. In the contest everyone working in the product area world-wide are invited to send in their ideas according to pre-determined themes or by internal experts identified challenges in need for new solutions. An IT-based idea management system is used to systematically gather ideas and provide feedback to the idea givers. The best solutions receive prices (most common are smaller technology devices or gadgets) and the idea-givers are offered support to develop their ideas further. The call for the contest is well-communicated on the intra-net. The areas where ideas are searched for are described by a champion which most commonly is a person working either in the advanced technology or business management department. One person in a part-time innovation manager role is responsible for coordinating the contest which takes a lot of time; not the least to engage champions in identifying areas and evaluating the ideas and to take
of the communication. The contest is popular, not the least outside the head-quarter organization. Few ideas have however been developed further resulting in a rather few “success cases”. In parallel to the idea contest routine, a yearly so called innovation day is arranged. The purpose is to inspire and motivate people in the organization to engage in innovation and “think differently” by inviting external presenters and experts in diverse range of subjects; from new technologies to spiritual or physical adventurers. These days are like the contest well-communicated and structured and are managed by a group of voluntaries. The innovation days are also replicated on a monthly basis although in a significantly more modest format. These monthly innovation days have been elaborated with; from being a mandatory two-day-in-a-row to a half-day on a voluntary basis. The work to create and maintain the formal organizational routines to foster innovation are in unit A managed by a group of individuals that work part-time with this effort. They meet on a regular basis with the purpose to plan for the innovation days and contest. In parallel to the formal group, an informal network of coaches has emerged in the unit. These coaches consist of rather senior and experienced individuals that see as their mission to help the organization going through a transformation to become more flexible and innovative; “towards a management 3.0”. Some of the coaches in this network have also recently started to support the innovation work by offering their support to teams or individuals that want to learn how to develop new ideas.

A “combat” is described to be ongoing between what is referred to as more people oriented innovation champions who focus on coaching and creating opportunities for organizational members to meet and to empowering people and the “process-and-tools” champions that have a predilection for the implementation of structured methods and tools as the key to foster innovation. This “combat” is raised to hamper the work to create an innovative environment in this unit.

Despite its enthusiastic innovation drivers, the interest from organizational members in the unit to participate in the innovation fostering activities is rather low, as is the attention to idea generation. Few make use of the formal idea management tool available. The low level of manager’s engagement in the innovation work and in communicating the importance of innovation is raised by the respondents as being the main explanation to this. Also, several respondents not being part of the innovation board raises concerns towards the type of inspirational activities offered and separate between what they refer to as “real innovation work” which is related to realizing more radical changes in technologies and products and what they consider are “innovation campaigns” (i.e. contests, innovation days etc.) which they feel foreign and sceptical to.
The number of organizational routines directly dedicated to support innovation created in unit B are few. Only the routine to keep allocating 20-30% of everyone’s time is purposefully in use to foster innovation and improvement. The respondents find the message from management in the unit clear regarding this “rule” and agree with its underlying philosophy. Two other routines that are considered to indirectly foster innovation are brought up. A knowledge sharing routine is found to be supportive in its ability to regularly enable everyone in the unit to meet each other during one day. The purpose of this routine is for everyone to have the chance to share their knowledge with each other. Only occasionally, external presenters are invited. A smaller team of voluntarily dedicated individuals are coordinating these days by engaging employees in different subjects of interest and by creating an agenda. In these days, also managers in the unit are present part of the days to inform about ongoing projects and business. In addition, a new “routine” has been introduced since about a year inspired by an external consult, where a constant dismissing of certain words is emphasized in order to infuse a new less risk-adverse culture. Another word that is emphasized is “facilitating” at the expense of steering or directing when the leadership of the units managers is discussed.

Innovation as an outcome is in Unit B communicated as important although no formal organization or dedicated roles to create conditions to support innovation is thus in use. Previously this unit made use of idea contests but since very few ideas were found to be developed, and it was not considered to foster innovation in the organization it was terminated.

Even though 20% of every one’s working hours ought to be dedicated to innovation and improvement the respondents report that few employees seldom find the time to make it happen. The reason behind is said to be the high-pressure from the development team in completing tasks within ongoing product development projects. Since the line managers in this site are following a managerial principle where their role is on facilitating rather than steering their team, the teams act rather autonomously and few teams are seen to incorporate goals on improving and innovating. Another challenge highlighted by the respondents is the developer’s lack of direct contact with customers which is considered to provide a barrier to innovation. A request for less “developed” information from the business managers are brought up as one way to manage this lack. “Raw data” such as interview data or stories would enable people to get a better picture of the customer’s problem which is suggested to stimulate more innovative ideas.

### 4.1.3 Unit C

Unit C has a large and highly dedicated formal organization in place to create conditions to support innovation. An ambitious vision is expressing its goal to be recognized as an innovative site also inside the global company. A structured approach for evaluating and following up and give feedback on ideas, as well as how to recognize and reward
employees, has been developed. Everyone is allowed to spend 5-10% on innovation and the ideas considered most promising receive support in terms of limiting funding. The innovation manager in the unit is represented in the management board in the unit which is brought up as critical to make innovation visible and as it signifies the importance of the innovation fostering effort. The innovation board consists of innovation coaches or drivers representing each department in the unit. Some of the innovation drivers make use of the formal IT-based idea management tool available in the company why others work only to motivate and train individuals in certain methods that are considered useful to innovation. The use of the board and its task to frequently initiate and follow up on different actions to support innovation has been in use for several years. The systematic approach and its many representatives have given rise to the implementation of several organizational routines to foster innovation. Each department has its own innovation goals that are connected to the overall vision. These targets are typically expressing number of ideas generated and implemented and the specification of actions to motivate people to innovate. In addition, to support many of the routines, a physical space “The innovation garage” dedicated to innovative activities have been designed for anyone to book via intranet. The idea contest headed by unit A is considered an important routine in unit C and to make sure ideas are further developed a prototype contest has been created which focus specifically on idea development.

The routines created in the unit differ in terms of how formal and structured these are as well as their targets and depend on whom in the board that initiated it. Everyone’s initiative in the board is welcomed and tried out and its outcome is shared through monthly newsletter to everyone in the unit. Similar to in Unit A, there is a “combat” ongoing between actors in innovation related roles that are more people oriented and those that prescribe processes and tools. However, in opposition to in Unit A this is considered as valuable conflicts as it spurs debates and the development of routines of different types.

The units broad representation of a large number product areas is highlighted as an advantage as it enable cross-functional collaborations which give rise to potentially more novel innovations. On the other side, the lack of representatives from the business management is brought up to hamper the development of new ideas since it makes it harder to judge the value of more novel and product-area-transcendent ideas. Many respondents bring up the issue related to trying to “get hold” of business management people and the present lack of a business person that is not responsible for only one product area but for future yet unknown areas.

4.1.4 **Unit D**

Unit D like Unit C is a site located in Europe outside the headquarters in Sweden. Several of the managers highlight the importance for the site to have full responsibility
for its product area which they mean enables both the initiation and implementation of innovations and enable them to act quickly on new opportunities. Even though they do not have business representatives located in the site, they have developed supportive routines to make up for this.

The respondents in Unit D are enthusiastic about their organizational routines to foster innovation and bring up several examples on output which they mean is the reason for why they have kept using and further developed these routines for the last 3-4 years. The managers express the work to improve conditions for innovation a key priority as a means to “survive” as a unit within the global company. They consider it important to frequently communicate the importance of innovation and recognize and rewards people who come up with or implement new ideas. No formal individual “innovation roles or goals” are used as this is considered to be counter-productive as innovation should be everybody’s responsibility. By dedicating specific roles, this would communicate that it is only for certain individuals. The same applies for dedicated time for innovation; if “innovation time” would be communicated, the message would then be that innovation is not part of the daily work. In the unit two main categories of ideas are defined; product related ideas and in-process ideas. The latter refers basically to any ideas outside traditional product or technology related ideas. To support in-process ideas an organizational routine referred to as the Dragons Den has been created and successfully been used for about three years. This routine provides a frequently repeated opportunity for anyone to frame and sell their ideas in front of senior management to enable funding and resources. Further it provides valuable training in what it means to stand up and fight for your idea. No specific themes or areas are defined; the most promising ideas receive further support and anyone can return to have their ideas evaluated again.

A specialized force which experiment and develop rapid prototypes in close collaboration with customers is put forward as a key to innovation in this unit. People in this group consist of experienced and people skilled in all from coding to understanding system technologies. In addition, young promising engineers are allowed to spend maximum two years in the group before going back to development department as a tool to transfer knowledge in the organization. The largest challenges brought up by the respondents working in the group are related to the time and effort required to create an understanding of more novel solutions when aiming to transfer these to product development. The manager of the group means that he needs to fight not only for the group’s existence and its novel outcomes, but eventually he also need to prevent people in the group becoming too arrogant and develop a “we could do that in two weeks-attitude”.
Table 2. Organizational routines to support innovation in each unit

<table>
<thead>
<tr>
<th>Routine</th>
<th>Years in use</th>
<th>Frequency of use</th>
<th>Purpose</th>
<th>How is it performed?</th>
<th>Expected outcome</th>
<th>Examples of support structures</th>
<th>Linked to other structures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unit A</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Innovation contest</td>
<td>4</td>
<td>Yearly</td>
<td>To inspire anyone to come up with new ideas</td>
<td>Themes presented. Winning ideas rewarded and supported.</td>
<td>Ideas in pre-defined themes + “wild idea”</td>
<td>Defined process, IT-based tool, communication material</td>
<td>Separate event.</td>
</tr>
<tr>
<td>Innovation day</td>
<td>3</td>
<td>Yearly</td>
<td>To inspire and educate people from all departments in a broad range of innovation related topics.</td>
<td>Inspirational talks, product information, seminars and workshop</td>
<td>Employees motivated to innovate.</td>
<td>Agenda, colourful T-shirts, posters, small rewards (mugs etc.)</td>
<td>Separate event.</td>
</tr>
<tr>
<td>Mini-innovation days</td>
<td>3</td>
<td>Monthly</td>
<td>See above</td>
<td>See above</td>
<td>Employees motivated to innovate + increased number of ideas.</td>
<td>Agenda, free breakfast offer, colourful T-shirts, posters.</td>
<td>Separate event.</td>
</tr>
<tr>
<td>Idea coaching</td>
<td>1</td>
<td>On demand</td>
<td>To support teams in e.g. creative methods or how to develop an idea.</td>
<td>Innovation coaches in an informal network can be requested by anyone.</td>
<td>Employees motivated to innovate + increased number of ideas.</td>
<td>Visual planning board near the entrance.</td>
<td>Part of daily work</td>
</tr>
<tr>
<td>Innovation board</td>
<td>3</td>
<td>Monthly</td>
<td>Planning for the innovation days.</td>
<td>Innovation coaches in planning meetings</td>
<td>Agenda for the innovation days</td>
<td>n/a</td>
<td>Connected to innovation days</td>
</tr>
<tr>
<td><strong>Unit B</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20% time dedicated to</td>
<td>2</td>
<td>Constant</td>
<td>To enable employees in generating and implementing new</td>
<td>The overall goal is communicated by units’ mgmt. board.</td>
<td>New ideas and improvements</td>
<td>None.</td>
<td>Part of daily work.</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Activity</th>
<th>Frequency</th>
<th>Description</th>
<th>Communication</th>
<th>Description</th>
<th>Link</th>
</tr>
</thead>
<tbody>
<tr>
<td>A full day dedicated to information and knowledge sharing</td>
<td>2</td>
<td>Every third week To support the sharing of information and knowledge among employees in the unit.</td>
<td>Workshops, seminars held in diverse areas by the unit’s employees.</td>
<td>To increase learning in the unit.</td>
<td>A full-day agenda, posters.</td>
</tr>
<tr>
<td>Systematic exchange of certain words</td>
<td>1</td>
<td>Constant To support the building of a new culture in the unit.</td>
<td>The preferred words are used in ppt presentations.</td>
<td>A less risk-adverse and more team oriented culture</td>
<td>PPT presentations.</td>
</tr>
<tr>
<td>Unit C Innovation contest</td>
<td>4</td>
<td>Yearly Same as in unit A (See above)</td>
<td>See above</td>
<td>See above</td>
<td>See above</td>
</tr>
<tr>
<td>Innovation day</td>
<td>3</td>
<td>Yearly Same as in unit A (See above)</td>
<td>See above</td>
<td>See above</td>
<td>See above</td>
</tr>
<tr>
<td>Prototype contest</td>
<td>2</td>
<td>Yearly To develop promising and/or winning ideas in the idea contest into prototypes.</td>
<td>Winning prototypes rewarded and supported</td>
<td>New prototypes.</td>
<td>Defined process. Communication material</td>
</tr>
<tr>
<td>Formal skunk work</td>
<td>1</td>
<td>On demand To stimulate the generation and development of innovative ideas.</td>
<td>A team get together to generate ideas and develop prototypes.</td>
<td>New prototypes.</td>
<td>Defined process. Communication material.</td>
</tr>
<tr>
<td>Creating a community of practice</td>
<td>1</td>
<td>Monthly get-together To train people in different subjects such as coding and coaching.</td>
<td>Invitations to anyone and set-up formal training.</td>
<td>Improved skills in coding and coaching</td>
<td>E-mail invitations. Training program according to defined methods</td>
</tr>
<tr>
<td>5-10% time</td>
<td>3</td>
<td>Constant To enable employees in</td>
<td>Communicated by</td>
<td>New ideas</td>
<td>Part of individual</td>
</tr>
<tr>
<td></td>
<td>Frequency</td>
<td>Purpose</td>
<td>Goals</td>
<td>Work</td>
<td></td>
</tr>
<tr>
<td>----------------</td>
<td>-----------</td>
<td>------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>Innovation board</strong> evaluates new ideas/monitor idea development.</td>
<td>Monthly</td>
<td>To evaluate new ideas. New ideas gathered and evaluated. Ideas under development followed up.</td>
<td>Increased number of developed and/or implemented ideas</td>
<td>IT-based tools. Excel-file with evaluation criteria, meeting agenda. Separate work practice. Linked to other innovation fostering routines.</td>
<td></td>
</tr>
<tr>
<td><strong>Idea coaching</strong></td>
<td>On demands</td>
<td>To support individuals/teams in sharing, develop and implement their ideas. Coaching, identify other people, advocate ideas further.</td>
<td>Developed and/or implemented ideas. Defined roles. Personal goals.</td>
<td>Part of daily work.</td>
<td></td>
</tr>
<tr>
<td><strong>The production of monthly newsletter.</strong></td>
<td>Monthly</td>
<td>To share information and outcome from innovation activities. Monthly newsletter on the intranet.</td>
<td>Employees motivated to innovate</td>
<td>Communication material. Part of daily work.</td>
<td></td>
</tr>
<tr>
<td><strong>Unit D</strong> Rapid prototyping in collaboration with customers.</td>
<td>Constant</td>
<td>To stimulate the generation and development of new ideas. A prototyping group works closely with customers to develop prototypes</td>
<td>Prototypes None</td>
<td>Part of daily work.</td>
<td></td>
</tr>
<tr>
<td><strong>Dragons Den</strong></td>
<td>Monthly</td>
<td>To motivate and train people in framing and present their ideas. Anyone to frame a problem and present an idea in front of sr mgmt. board. Top-ranked ideas receive funding.</td>
<td>New ideas, developed and/or implemented ideas. Focus is on in-process ideas. Simple template. Call for ideas on intranet.</td>
<td>Part of sr mgmt. work practice.</td>
<td></td>
</tr>
<tr>
<td><strong>Prototyping group works closely with product</strong></td>
<td>Weekly</td>
<td>To identify and evaluate innovative ideas. Regular meetings + people working part time in research.</td>
<td>Increased number of prototypes. Ppt –slides where ideas are presented.</td>
<td>Part of daily work.</td>
<td></td>
</tr>
<tr>
<td>Activity</td>
<td>Duration</td>
<td>Frequency</td>
<td>Objective</td>
<td>Action</td>
<td>Impact</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>----------</td>
<td>-----------</td>
<td>----------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>Transfer of prototypes to development department.</td>
<td>3</td>
<td>On demand</td>
<td>To share knowledge of a prototype and advocate them for becoming part of NPD.</td>
<td>A series of meetings alt. joining NPD project for limited time.</td>
<td>Increased number of prototypes accepted</td>
</tr>
<tr>
<td>Training of young engineers</td>
<td>3</td>
<td>Constant</td>
<td>To transfer knowledge from sr engineers to young and promising engineers</td>
<td>Young engineers allowed working max. two years in the prototyping group.</td>
<td>Innovative engineers.</td>
</tr>
</tbody>
</table>
5. ANALYSIS AND DISCUSSION

The broad and many times conflicting suggestions found in literature, on how to organize and manage innovation in organizations found in literature are also represented in this single company. The cross-unit analysis reveals that the R&D units studied have selected and developed different innovation routines and it is also clear that these differences form diverse approaches. The different approaches have been labelled *gaming and inspiring*, *framing and fighting*; and *norming and learning*. Each approach is found to be related to different innovation management literature streams which influences what issues the routines selected are targeting.

5.1 APPROACHES IN SELECTING AND DEVELOPING INNOVATION ROUTINES

The *gaming and inspiring* approach makes use of yearly contests and dedicated “innovation days” to spur the generation of new ideas and to inspire people in the organization. Voluntarily appointed innovation coaches are selecting and designing the innovation routines. Employees are encouraged to take both induced and autonomous initiatives; ideas within strategic areas as well as solutions of any kind are welcomed. The underlying argument to this approach is an understanding of innovation as foremost in need of managing human attention, one of the known core problems in innovation management (van de Ven, 1986). People tend to prefer to spend time with what they are familiar with and what is rewarded in the organisation. As a consequence, innovation is viewed to be in need of activities and routines that largely deviate from normal operations in order to create appropriate attention. The innovation days are dominated by information sharing and many of the presentations held are targeting the breaking of people’s mental models to support a recognising of new opportunities and to appoint alternative ways of working (e.g. Argyris, 1993; Sinkula, 2002). This approach associates innovation with creative problem solving (Amabile et al., 1996; Basadur et al., 1982). The difference between the two units making use of this approach is related both to the number of routines in use and the phases in an innovation processes these are targeting. Unit C is seen to both make use of a broad number or routines and to target all phases in an innovation process in contrast to unit A, see Table 3. Another difference between unit A and C is that the former do not perform a systematic follow-up and communication on the outcomes from the contest and days. In unit C the ideas generated and the development of these are regularly and interactively evaluated and communicated within the organisation. An interactive usage of feedback collected on a regular basis is found to support the creation of new ideas and experimentation (Simon, 1995).

The approach labelled *framing and fighting* has selected and developed routines that differ from the one characterising unit A and C as can be seen in Table 2 and 3. Inspired by a famous television program, Dragons’ Den, everyone in the organization is on a monthly basis encouraged to “frame” a problem and sell or fight for their idea in front of the senior management board in order to potentially receive funding. In addition a special group dedicated to build rapid prototypes in collaboration with external customers has been created. The group and its work practices although successful in developing new ideas is far from well-accepted in the organization which set specific demands on its management thus a “fighting” for its
existence as well as for the novel output that is generated is a continuous effort. Routines are selected by senior management and are designed around face-to-face meeting between employees with new ideas and managers and/or customers in order to get their approval or disapproval and possible support. The “framing and fighting” approach represents thus another and different view on what innovation is foremost about; the socio-political aspects of innovation (Dougherty and Hardy, 1996; van de Ven et al., 1989) that emphasize managing conflicts or tension is at the core of innovation management. Autonomous initiatives are highlighted to require special individuals with broad and deep technology competence, long advanced product development experiences along with an explorative mind-set. Hence, a separate group dedicated to identify and develop more radical opportunities is created. Such separation reflects the structural ambidextrous organisation argued for by Tushman and OReilly (1997) or high-weight project team (Eisenhardt and Tabrizi, 1995). The unit characterised by the “framing and fighting” approach is contended to have developed the most effective routines to more fully enable the “shocks” that according to theory is required to successfully initiate innovation (van de Ven, 1986) even though only for a few selected individuals. By providing opportunities for developers in the prototyping group to closely collaborate with external customers on a continuous basis, these individuals get directly exposed to the problems they are set to solve which has found to effectively stimulate innovation (Dougherty, 1992). “Translation” or retention routines have over the years been developed to facilitate the acceptance of novel concepts from the prototyping group to the product development organisation. Supporting this retention phase is highlighted to be the most time and energy consuming part of the innovation work and require persistence as well as an ability to “fight”. Even though the group is experienced it requires a manager with an ability to build strong relations internally and externally in order to defend the groups’ existence and who is willing to spend considerable time on and an ability to manage conflicts well. This can however be considered a “must-requirement” for any manager or individual getting involved in an innovation process (van de Ven et al., 1989; Dougherty and Hardy, 1996). This also shows that carrying out routines many times is more of an (truly) effortful accomplishment than the unconscious and energy-saving effort it many times is thought of (Becker, 2004).

The “framing and fighting” approach stands very much in contrast to the view found in unit B, see Table 2 and 3. In the “norming and learning” approach innovation is perceived to be a self-evident result if people are enabled to meet and share their knowledge. No routines are designed or formal organization dedicated to directly support innovation rather to simply allow time for innovation. The learning days constitutes part of the overall product development process and is not communicated or designed to support the generation and development of new ideas. In conjunction, the importance of creating the right culture through a consequent usage of certain words such as “experiment” (which embrace an open outcome) instead of “improve” (which implies a successful implementation) is a means to nurture a less risk-adverse culture and indirectly fostering innovation. This approach is thus seen to be based in another view of innovation; innovation in need of a particular environment or culture supporting learning. The close alignment of learning and innovation is known from several studies. Particularly stimulating the sharing of more tacit elements of people’s knowledge in face-to-face meetings is considered to be supportive to innovation (Nonaka, 1994; von Krogh et al., 2000). No separation between autonomous and induced initiatives is made as it is argued to not be necessary. Researchers emphasising contextual ambidexterity (e.g. Gibson and Birkinshaw, 2004) also propose that it is possible to create an environment where both exploration and exploitation (March, 1991) can simultaneously spur.
The three approaches identified in the empirical material are found to represent three different views or perspectives on innovation that also have consequences on what routines are selected and used. Each approach makes sense based in different streams of innovation management research; it is based on separate and equally valid innovation logics. The diverse viewpoints on innovation displayed in research are thus seen to be reflected also internally in the very same company. Since the external environment, the organizational context and overall vision and mission of the organisation is the same for all units, it can be concluded that the innovation perspective advocated for in each unit is a rather personal selection: it is highly related to the view and experiences by the managers or non-managerial employees responsible for creating innovation capabilities in an organisation. An interesting result indicated by the findings in this study is thus that innovation management taking a contingency perspective is closer related to who is responsible for selecting and developing innovation routines in an organization than on what factors are characterising the internal and external organizational environment. Having access to a broad range of approaches may be productive for an organization as innovation is known to be nurtured by differentiation in perspectives as well as processes and routines. However, for an organization to truly benefit from such diversity it becomes crucial to systematically learn from the experiences and outcomes in different units. Not the least since some approaches result in the selection and development of routines less effective in supporting employees in pursuing both autonomous and induced initiatives.

Table 3. Characteristics of the approaches in selecting and developing innovation routines in each unit

<table>
<thead>
<tr>
<th>Unit</th>
<th>Approach applied</th>
<th>Level of Engagement</th>
<th>Innovation phase addressed</th>
<th>Degree of routine embeddedness</th>
<th>Characteristics of artifacts in use</th>
<th>Preference of social action or social constraints</th>
<th>Degree of leader involvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Gaming and inspiring</td>
<td>Low</td>
<td>Variation, selection</td>
<td>Weak</td>
<td>Strong and deviant</td>
<td>Social constraints</td>
<td>Low</td>
</tr>
<tr>
<td>B</td>
<td>Normalising and learning</td>
<td>Low</td>
<td>N/A</td>
<td>Strong</td>
<td>Weak and familiar</td>
<td>Social actions</td>
<td>Low</td>
</tr>
<tr>
<td>C</td>
<td>Gaming and inspiring</td>
<td>High</td>
<td>Variation, selection and development and retention</td>
<td>Semi</td>
<td>Strong and deviant</td>
<td>Both</td>
<td>Moderate</td>
</tr>
<tr>
<td>D</td>
<td>Framing and</td>
<td>High</td>
<td>Variation, selection</td>
<td>Semi</td>
<td>Moderate to weak and</td>
<td>Both</td>
<td>High</td>
</tr>
</tbody>
</table>
5.2 CHARACTERISTICS OF INNOVATION ROUTINES

Two of the units (C and D) have been more successful in involving a broad base of their employees in innovation than the other two. As was shown in the analysis of the approaches in use, the differences between the units C and D are apparent taking a first sight (e.g. the units are using two completely different approaches). However, more similarities between these units emerge when analyzing the approaches more closely with the help from factors characterizing organizational routines, see Table 3.

First of all, routines addressing issues in all phases in an innovation process are selected and developed in both unit C and D e.g. the variation, selection and development and retention respectively. An understanding of innovation as a process that requires different types of support and structure or routines in different phases (e.g. Burgelman, 1991) is thus present. Autonomous and induced initiatives are considered to have somewhat different needs where the recognition of external opportunities are encouraged to support the latter along with the selections of routines connecting idea providers with appropriate support is developed in both units. This is in alignment to OConnor and McDermott (2004) that showed how important it was to connecting people who recognise radical opportunities with those who can identify a solution and appropriate support.

Secondly, the routines in use can in both units be described as semi-embedded; the innovation routines are entangled with each other and to some extent also with normal operations although being distinct from the latter through their labelling and particular artifacts. Also, the majority of the routines are frequently in use (see Table 2) which has been found to be more important than their uniqueness in creating capabilities (Weick, 1995).

An example in unit D is the frequently used Dragons Den routine that differs from normal product development processes but still it is rather straight forward to use for anyone in the unit by providing a simple template and having a procedure familiar from TV. This routine provides an effective means to prepare people for the innovation development phase as developing new ideas inherently involves a need to handle many different stakeholders who seldom share the same views on how to proceed with new ideas (van de Ven et al., 1989; Dougherty and Hardy, 1996). Further, it provides an opportunity for resourcing in terms of budget, time and management support.

Unit C is also seen to effectively target the development phase by making use of a “prototype” contest in conjunction to the idea contest. This contest is further supported by the arrangement of so called “skunk works” where people get together to develop new ideas and by nurturing communities of practice for coaching or programming. These routines are seen to create opportunities for people to meet face-to-face with others to create knowledge and get support in developing ideas important in enabling the development of new ideas (Tushman and Nadler, 1996; Nonaka, 1994). In the former, strongly cultural infused artifacts associating to gaming and “hacker culture” in the communication material is provided to separate these routines from normal product development work.
Thirdly, formal leaders are actively supporting the innovation routines; either as in unit C by being part of the innovation board and by making the innovation manager part of the senior management board or as in unit D engaging the whole senior management team directly in selecting and supporting the development of new ideas. In both units the routines are regularly reflected upon and further developed although unit C is making use of a much more systematic approach compared to unit D.

Finally, the training element in both these units is emphasized i.e. making people skilled in or capable in developing innovative ideas in parallel to more passively creating conditions conducive to innovation see Table 2. The training in both units does however not mean that training is separated from the innovation routine itself. Rather, in these units training is seen as a crucial part of innovation itself. Creating deliberate learning mechanisms have shown to be more effective than a semi-automatic approach not the least when building capabilities for strategy-transforming innovation (Berghman et al., 2013).

In a similar manner to when analyzing the units judged as more successful, some similarities are revealed when analyzing the units showing a lower level of engagement for innovation (unit A and B) as illustrated in Table 3. In neither unit routines targeting issues in all phases in an innovation process are created and the routines are either well-embedded (in unit B) or weakly embedded (in unit A) which stands in contrast to the semi-embedded routines characterizing unit C and D. For instance, in unit B, time for innovation is allocated but not specified when and the knowledge sharing routine is well-integrated with the pace of ongoing product development project. In unit A, the innovation routines in use distinguish noticeably from normal operations taking almost an event-like character; the latter being further emphasized by the artifacts in use as can be seen in Table 2. The “innovation as normal operations” as is seen in unit B is here proposed to be as problematic as “innovation as an event” characterizing innovation in unit A. This is suggested to highlight a key issue related to selecting and developing routines to support innovation: innovation routines needs to be perceived as both familiar and deviant at the same time in order to become effective.

The usage of strongly culturally infused artifacts such as colourful t-shirts and special prices etc. is common in the units making use of a “gaming and inspiring” approach and were raised to be partly responsible for creating a reluctance to the ongoing innovation work. Not the least from more senior engineers and business managers. This was considered problematic especially when aiming to create effective routines to support the development of new ideas as both business and technology aspects are critical to bring in. In Unit D, the close collaboration between the research, prototyping and product management representatives was frequently brought up as the key to their unit’s productive innovation work echoing Dougherty (1992) that more innovative companies are found to be successful in identifying integrating mechanisms between competences needed in product innovation.

If the artifacts are too deviant these thus risk to contributing to weakening the linkage to existing structure and processes, especially, when innovation routines are not linked to each other and innovation is explicitly communicated as being more fun than normal work as in unit A. However, as is seen in unit B, a too strong linking between innovation routines and normal operations may be as hampering as a too weak; innovations are not a natural result from managers communicating that employees are allowed to spend time in induced and autonomous
initiatives. It is suggested that the use of artifacts in this unit may have the potential to act as a remainder to stimulate attention and hence support innovation. Hence, it is here suggested that the call for increased attention to artifacts in organizational routines literature (e.g. Labatut, 2012) may provide a fruitful path also for innovation management researchers.

5.3 DESIGNING STRUCTURES VERSUS MANAGING SOCIAL RELATIONS

The innovation routines in use in unit A and many in use in unit C as well, see Table 2, have a rather procedural characteristic. For instance, the idea contest makes use of input in the form of directing strategic relevant areas, is guiding how to send in ideas and the criteria for evaluation and explicit goals of number of winning ideas and their associating rewards are in use. The innovation days do also have a procedural character in the form of an agenda guides how the sharing takes place and not the least when. These routines contrast the considerable more simple routines identified in unit D. Referring to research, simple, non-codified routines and a dependence on people are argued to better support initiatives undertaken in situations characterised by high levels of uncertainty (Eisenhardt and Martin, 2000). Unit D is thus proposed to have selected routines more effective in enabling autonomous routines than the other units. Further, the involvement of the senior management board and the retention routines developed are argued to hinder these simple routines being easily forgotten.

An additional difference between unit A and C is also found in how the portfolio of routines is managed. In unit A, a few routines have been selected and have been in use for several years. In contrast, unit C is seen to continuously experiment with a large number of different routines. From an organizational routine perspective, the unit’s lack of long-lived routines to foster innovation can be viewed as a failure in building capabilities (Nelson and Winter, 1982; Grant, 1997). It can on the other side be viewed as the opposite as such approach enable the high level of dynamics and flexibility shown to be beneficial to innovation (Kanter, 1983). An important innovation routine identified in this setting be described to be a continuously design, use and learning from a wide range of routines; the goal is thus not to identify the “best practice” but rather to develop a capability to master a multitude of innovation routines. It also indicates that implementing a frequently measuring and monitoring of outcomes may provide a valuable complementary routine when experimenting with new routines. This is suggested to support the continuous reflection required to develop useful routines as highlighted by Feldman (2000) and Feldman and Pentland (2005).

The use of the diverse types of routines in use in unit C was brought forward to be a result from the different views on how to best manage innovation among the many innovation coaches involved in the work to build innovation capabilities in unit C, see Table 1. It also reflects the tolerance for the different views held by the coaches in this unit as their disagreement is not downplayed but people are given freedom to test and implement new ways of working on a continuous basis. This stands in contrast to unit A, where the conflict among different “camps” between the “process-and-tools and “empowerment” actors was seen to lead to large frustrations. This combat between managing structures versus social relations may not necessarily need to be a bad thing; debates on how to stimulate innovation can facilitate the development of innovation routines (Pentland and Feldman, 2005). Processes and tools may serve as cognitive frames when dealing with high levels of uncertainty and complexity (Adler and Chen, 2011; Davila, 2005) and be considered as more familiar which has earlier shown to support the acceptance of new
innovation work practices (Kelley, 2009). A too high focus on structure on the other side, risk innovation to be perceived as “just another tool” which becomes demotivating and make people less prone to take time to participate in the work of innovation. Also, innovation is a foremost a social process which has in numerous studies shown to require attention to creating an innovative environment where people feel encouraged to come with and purse the development of new ideas (Kanter, 1983). This use of a mix or portfolio of routines is here argued to contribute to the development of the “dual design” advocated for by Dougherty (2008) as it can be considered to avoid the bias towards social action or social constraints (Giddens, 1982). It is also suggested to constitute a unique capability to innovate as earlier studies have indicated that a fruitful management of the tension arising when aiming to constrain and enable actions is beneficial for innovation (Simons, 1995).

This contrasts unit B that stands out as being very closely aligned to values and norms associated to social actions (Giddens, 1979; 1982) to enable innovation. Innovation is believed to come automatically if time for innovation is allowed, opportunities for learning are offered and a more risk-taking climate is created which is in alignment to advices provided in a vast amount of innovation literature (West, 2002; West and Anderson, 1992). However, only relying on social actions is in this study proposed to contribute to the difficulties this unit is seen to have in relation to innovation. Adding to this is how managers in this unit are fostered to step away in order for innovation to emerge and flourish. This is sometimes referred to as a “romantic conception of the creative act” and has found to be a less effective strategy when aiming for innovation (Mumford et al., 2002). Managers have shown to play an important role in legitimating innovation and having a critical role in spurring knowledge creation (West, 2002; Nonaka and Takeuchi, 1995) and support the realization of not the least more novel ideas (e.g. Day, 1994) why their passive role in this unit is considered problematic. A single focus on enabling social action by minimizing constraints and managerial interventions is hence suggested to be a less effective strategy for companies aiming to involve employees in pursuing both autonomous and induced initiatives.

6. CONCLUSION AND MANAGERIAL IMPLICATIONS

This study shows that the routines created to support employees in the pursuit of both autonomous and induced initiatives in large mature company are manifold and diverse. What routines are selected is largely dependent on personal views on what an innovation process is foremost in need of rather than on internal or external environmental contingencies; the lack of consensus on how to support innovation within the innovation management community is found to be reflected in actions in practice. Accepting diverse opinions on what innovation is in need of can create a valuable source of tensions that stimulate innovation in an organization. Having access to a broad range of approaches may be productive for an organization as innovation is known to be nurtured by differentiation in perspectives as well as ways of working. However, for an organization to truly benefit from such diversity it becomes crucial to systematically learn from the experiences and outcomes in different units. Not the least since the study shows that some approaches result in the selection and development of routines or combination of routines less effective in supporting employees in pursuing both autonomous and induced initiatives.
Based on the analysis, it’s concluded pivotal that the actors responsible for creating conditions conducive to innovation in an organization need to select routines to target the variation, the selection, development and the retention of innovation initiatives. It is furthermore recommended to not fall in the trap to make innovation too closely associated with creativity and idea generation and thus consider routines that not only provide the resources needed to generate new ideas, but also the routines that educate people, thus providing them with the necessary skills. In addition, the innovation routines need also to be neither too strongly, nor too weakly integrated in the normal operations. Understanding how to properly “dress” innovation routines i.e. how to design the artifacts in use emerge as important to develop. Neither an overdressing, nor an underdressing is found to be effective as innovation routines need to be perceived as both familiar and deviant. In this paper this balancing act is argued to be crucial and deserves increased attention in research.

The use of structures or social constraints emerge as crucial i.e. not only make use of social actions by providing resources and stimuli and “hope for innovation to happen”. However, a too strong focus on structures and procedures is also shown to be problematic and in line with Dougherty (2008) conceptual model this study illustrate the importance on considering both social actions and social constraints when deliberately building innovation capabilities in practice. The study also complements this model by taking an intra-organizational perspective on innovation. By embracing that innovation is a process with different phases having different needs also as a consequence from whether it concerns autonomous and induced initiatives is here suggested to create an understanding on when and how to effectively combine social constraints and social actions in practice. Finally, in line with much of existing literature, engaged leaders arise as eager.

This study has limitations that need to be taken in consideration. It is performed within one single company and the type of routines and approaches identified may look different in other settings that may have an impact on the result. Additionally, while the researchers tried to investigate the routines in an exploratory manner its result can be challenged in terms of what is defined and observed as routines and particularly what is proposed to be effective routines or combination thereof. Future studies are suggested to be designed to challenge and test the result of this study and its underlying assumptions.

REFERENCES


Booz & Company Global Culture and Change Management Survey 2013


