

Early Innovation Leadership

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Abstract

This paper presents an exploratory case study of five companies in an industrial cluster in Norway with the purpose of exploring how companies in this specific Norwegian context lead and organize their innovation efforts. All companies regard innovation on products or services as essential for survival in the competitive offshore and marine market. The companies have been examined based on leadership style and organizational context. The preferred leadership style is relatively flat organizational structure, great freedom of work, and self-leading employees. In terms of organization, the companies work multi-disciplinary both in terms of function and profession. Everyone's opinions and ideas are equally appreciated and practical experience and skills are greatly appreciated. The findings add to current body of innovation literature, and may be used by both practitioners and researchers looking for best practice references.

Keywords: *Innovation, leadership, organization, teams*

1 Introduction

The west coast of Norway is a region with traditional ship-yards and furniture factories. In recent years the industry has been facing many challenges with recession in the European market, a shortage in qualified engineers, and high wages in Norwegian industry due to a booming oil and gas industry. As a consequence there has been a restructuring of the industry, where some manufacturing companies have strengthened their core processes whilst others have converted towards delivering services for the oil and gas industry. This study includes two manufacturing companies and three service providers for the offshore industry.

It is said that organizations today need agile and speedy responses to changes in their competitive environment [1]. This is one reason to focus on leadership, and leaders' ability to implement change in the organization [1]. However, the failure rate of implementing change in organizations is high; it is reported between 30-90% [2]. One reason why organizations fail is lack of ability and skills among leaders [2]. To improve what an organization already does well, incremental and continuous changes are important. For innovation to occur, on the other hand, disruptive and transformational change is necessary [2]. Transformational change can

also be described as “*changing to the extent of clearly differentiating itself in the market (Denning, 2005)*” [2]. The companies in the study are recognized as innovative businesses in the region. However, due to the challenges that the companies experiences there is a high focus on efficiency and product quality, which in turn challenges the early stages of innovation [3]. Further, early innovation characteristics such as creativity, experimentation and fuzziness calls for a slightly different leadership style than in the successive product development stages [4]. The purpose of this article is to investigate the following research question: *how do companies organize and manage their early innovation phases?*

2 Background

2.1 Innovation

Schumpeter defined innovation based on studies of economic changes in business in the 1920-1930s: “*This historic and irreversible change in the way of doing things we call 'innovation' and we define: innovations are changes in production functions which can-not be decomposed into infinitesimal steps. Add as many mail-coaches as you please, you will never get a railroad by so doing.*” [5]. The defining characteristics of innovation according to Schumpeter are “*the doing of new things or the doing of things that are already being done in a new way.*” [6]. There is still ongoing debate on the “newness” in innovations, the domains where innovations take place and the motivation for doing innovation. It is important to keep in mind that Schumpeter mainly studied economic changes in a business setting. In general, he regarded innovation as a something that leads to economic growth. Definitions of innovation concerns newness of some degree: for example “*the introduction of new and improved ways of doing things at work*” [7]. The demand for newness to qualify as innovation vary, from “new to the world” as the meaning of “unique” to “*something that is new for the organization*” [8], or “*an innovation may be common practice in other organizations but it would still be considered as such if it is new to the unit under research*” [9]. Other demarcations in innovation are between incremental and radical innovation or between continuous and discontinuous innovations [10]. In 1935 Schumacher discussed several domains for innovation that are still considered relevant, such as production techniques, new markets, new commodities, and both products and services. In today's market service innovation is of highly economic relevance and a current debate is to weather service and product development can be regarded similar or different. An “assimilation approach” argues that insights and models developed for the manufacturing context can be applied to services, whereas the “demarcation approach” argues that there are substantial differences [11].

Innovation as a process concerns various approaches and methods to achieve innovation, for example Stage-gate-models [12], open innovation [13], and design thinking [14]. Further, innovation as a process concerns human beings, from the perspective of knowledge generation [15], social interaction and communication [16] or creativity [17]. All innovation processes and the creation of new products start with the fuzzy front end phase [18], which refers to the portion of the innovation process that takes place before the more structured new product development process. According to Koen et al. [19] the innovation process can be divided into the three phases; fuzzy front end, new product development and the commercialization stage. The first phase is normally identified to start when an idea or opportunity is being identified and end with a decision whether or not to kick-off a development project. According to Cooper and Kleinschmidt [20], proficiency of up-front activities is one of the key success factors of the subsequent product development process. There has for years been an discussion whether the fuzzy front end process should be formalized or left unstructured [21, 22]. Some propose a rather structured and linear model while others claim that there is no point in pursuing such rigid models. Hence, to organize or

motivate the efforts from individuals and teams in an organization towards a common innovation, leadership is considered essential.

2.2 Innovation leadership and organization

Many organizations and leaders strive for lasting and meaningful changes which in turn leads to innovation and increased competitiveness [2]. However, few organizations are capable of achieving such changes, and a primary reason for this may lie within its leaders and managers. The people are the main responsible for leading change efforts, and their skills or lack of skills will highly influence the success for such changes [2]. According to Gilley, there are six skill sets and abilities that have been found to positively influence organizational success rate: 1) coach, 2) reward, 3) communicate, 4) motivate, 5) involve and support others, and 6) promote teamwork and collaboration [2].

Based on an in-depth literature study, Crossan call for attention to determinants of innovation on a leadership level (the way managers provide directions, implement plans and motivate people) and on an organizational level (the board of directors' ability and motivation). On the organizational level; missions and strategy, structure and systems, resource allocation, organizational learning and knowledge management, and organizational culture are viewed as important factors [9]. To succeed with innovation, well-structured processes are not sufficient, it is important to take into account that people relate to each other, to the team and the organization, therefore an organizational context that fosters innovation is essential [23]. Organizational culture can be seen as the deeply grounded values and beliefs in an organization [24]. Determinants for an organizational culture that stimulates or hinders creativity and innovation are strategy, structure, support mechanisms, behaviour, and open communication [24]. Further, Ekvall regards organizational climate as attribute to the organization that is independent of perceptions and understandings of its members [17]. Based on four larger empirical studies Ekvall proposes ten organizational climate factors that influence innovation capabilities: 1) Challenge, 2) Freedom, 3) Idea support, 4) Trust, 5) Dynamism / liveliness, 6) Playfulness / humour, 7) Debate, 8) Lack of personal conflicts, 9) Risk taking, and 10) Idea time.

Several studies indicate that early innovation stages demands time to elaborate and nurture the idea [17]. Whereas the execution stage of a project should have a time limit and [25]. There are also indications that leadership style should be different in early stages of innovation that is characterized as creativity and fuzziness, than in the successive product development stages [4]. Generally, innovation requires both exploration and exploitation, therefore [4] it calls for ambidextrous leadership for innovation that switches between opening and closing leader behaviours, thus expanding and reducing variations. Rosing et al. builds on March's two forms of organizational learning [26]: first, exploration that is characterized as experimentation, risks, variance etc, and exploitation that is aimed at reducing risks and variance. Rosing et al. further indicate that both transformational and transactional leadership can be relevant for innovation. Transformational leadership uses inspiration, intellectual stimulation, to motive and encourage experimentation and creativity, whereas transactional leadership is to clarify goals, and the use of rewards [4]. Innovation is often carried out in teams. To foster innovation "*vertical transformational and empowering leadership and integrity enhanced shared leadership*" is important [23]. To encourage self-leading teams that takes ownership to the tasks, work strategically and "control what work is and how it is carried out", the leadership should be democratic or empowering and passive [27]. Leadership further affects how teams are formed and performed within an organization. In terms of

innovation and creativity, factors such as size, team composition, knowledge and skills, personalities, as well as opportunities for team work may all affect team performance [28].

3 Research Design

3.1 The companies

The present research reports on a conducted explorative case study, and as such, selecting an appropriate sample is important. Relevant criteria include relevance for research questions, if the phenomenon to be studied may appear, and if it is feasible and ethical [29, 30]. With this in mind, the companies were selected for interviews based on high degree of either product or service innovation, both incremental and radical, from turnover and market reputation. All companies participating have in-house development departments, and furthermore, produce its products in Norway or deliver its services to the Norwegian market. All companies were further sampled from the same geographical region of Norway, the Norwegian west coast, to ensure the same social and geographical background to most of the interviewees. The west coast of Norway is a region with traditional ship-yards and furniture factories, often family owned businesses, but in the later years the booming offshore and offshore service sector have introduced newcomers to the area, or made it possible from traditional companies to enter this fast growing sector. The companies mainly belong within the business to business (B2B) sector, with the exception of Company A who is also in the business to customer (B2C) sector. Furthermore, all the case companies participates in a strong regional cluster, which focuses on developing an innovation accelerator for the participating companies, and on involving the companies in R&D projects with strong research partners. All the companies participate in regional cluster, which focuses on innovation and R&D projects. Table 1 summarizes some main company characteristics.

Table 1 Company characteristics

External Sources	Specialization	Size	Innovation Type
Company A	High, lighting solutions for offshore, marine sector and buildings	1828 MNOK 554 employees	Product
Company B	High, offshore services and support (drilling, lifting, inspection)	139 MNOK 36 employees	Work processes for customers (services)
Company C	High, offshore engineering, inspection and maintenance	787 MNOK 464 employees	Work processes for customers (services)
Company D	High, land based technical and logistic support station for offshore, industry onshore service and supply	453 MNOK 208 employees	Work processes for customers (services)
Company E	High, offshore lifting and handling equipment and solutions	215 MNOK 47 employees	Product

3.2 Data collection, analysis, validity and limitations

A detailed research protocol describing data collection methods was developed and pretested with academic faculty before the interviews were conducted. The interviews were conducted at the companies location in June to September 2013 using a semi-structured interview form based on a pre-developed questionnaire. In each company, 2-3 experienced (more than 10 years of work experience within current role) persons where interviewed, including the head of development and development engineers in the department. The interview sessions were planned for two hours, but rarely finished in time because the objectives seem to like talking about innovation. All interviews were recorded and later transcribed. Some additional information was also collected during the course of the interviews concerning organization of the companies in general, as well as the physical appearance of the workspace in which innovation and development activities are performed. Photos were taken to support this data

collection. Moreover, all companies were also asked to submit some general background information on email concerning company size, turnover, etc. This information was received after the interviews were conducted, but was an important part of the analysis process.

The collected data were analyzed with the objective of identifying how the companies organize and manage their early innovation phases. Transcribed information was coded and analyzed in a matrix display for patterns and themes for similarities and differences between the companies. The results presented here should be regarded as indicative only as the data in the case study reflect the personal opinions of the companies' employees. Moreover, to manage interviews in many different companies, depth in each company was sacrificed over breadth. However, as the main purpose was to conduct an explorative case study, the results are nevertheless interesting for providing an overview over several different companies. Further research in this field should therefore focus more on details in each company in order to capture nuances which might have been overlooked in this case study. According to Crossan and Apaydin [9], the view of innovation as a process is under-developed in literature, as the main focus of researchers has been on the innovation outcome. In this article, innovation is regarded as a non-linear iterative process. In this perspective it also includes the commercialization phase, and the successful deployment in the market [9]. This part of the innovation phase has only been superficially treated in this article, as the current focus has been on the early phases of innovation. The authors do recognize the importance of these phases as they are important for delivering organizational performance [9].

4 Results and discussion

We looked at how innovation is organized and managed within each company. In all companies, innovation is regarded and recognized as a process. Four out of five companies have formalized either all or parts of their innovation process. Company C, for instance, has developed a specialized fuzzy front end concept for use in large, high risk, or difficult projects. This concept is similar to the "Design thinking" concept as presented by Kelly and Littman [28]. Together with company C, company A has also developed procedures for how innovation steps are performed in their early phases, although not always followed. Company D and E have some procedures for their innovation work, whereas company B reported not to have procedures or routines for this at all. In these three companies, innovation happens everywhere; *"Innovation goes on everywhere – in the hallway or in the workshop"*. All case companies reported to have special areas to play with, develop and build prototypes, and test new concepts and as recommended by Doorley and Whitman [31]. These areas were fitted in a workshop like manner, and were focused on function rather than fancy elements like colors, furniture or appearance. Signs of wear and tear show that these rooms are in frequent use. They are not typical "show off" workshops; the users had taken ownership.

When it comes to innovation type and outcome, two of the case companies deliver product innovation, whereas three of the companies deliver service innovation, all considered new to the company, customer and the market. Currently, the companies do not invent new technologies, but explores and incorporates new or existing technologies in their products or services in new ways. These processes are strongly based on customers' needs and are performed in a typical user centered or customer centered approach to innovation. The companies stay within the current technological regime, and delivers consequently incremental improvements to their innovations. This is in accordance with Verganti's three modes of innovation. The typical market-pull (user-centered) innovation starts from the analysis of user needs and search for technologies and languages that can satisfy them. This type of innovation operates within current sociocultural regimes, but with a user-centered

approach, it allows for a good understanding of how people give meaning to existing things [32]. The need for speed and efficiency, combined with the extreme focus on safety in the markets in which these companies are actors, may account for why innovation mainly happens within the current sociocultural regimes. Customers are conservative and unwilling to try new solutions or products unless already proven safe and efficient. Hence, pushing new thinking and meaning through radical innovations may be too risky in these specialized market segments.

All the case companies deliver specialized products or services for the offshore and marine market, so currently, the impact of the innovations are on micro scale. (Company A operates in several markets, also the consumer market). However, company C and D are currently exploring the opportunity of taking their innovations to other markets and possibly making a wider impact. In addition to service innovation, company D also innovates within process innovation, that is, introduction of new production methods, new leadership approaches, or new technologies that can be used to improve and innovate in other processes [33]. Their new internal data mining process is an example of such, and is currently widely recognized within the market segment as a new way of dealing with real time data for improving internal work processes. Currently, company D is exploring whether this process innovation also can be turned into a product innovation. Company D is also exploring whether their service innovations within logistics can be used by i.e. the building and construction industry. Likewise, the specialized services provided by company C are also in the early phase of being explored by the onshore oil and gas industry, as well as onshore process industry. These market expansions enables these two companies a more stable customer base, and also renders the companies less vulnerable in downwards economic trends and the offshore economic cycles. An interesting saying refers to the Norwegian west coast leadership style as "actionable and short sighted". This is explained by the long tradition of having fishing as the main source of income where you had to go fishing when the fish arrived.

4.1 Innovation leadership

According to West et al., good leadership is important for creating conditions to support and guide companies' innovation efforts in all innovation stages, but also to contribute to effective interactions on group level [7]. All five case companies had similar leadership types leading the innovation work, experienced multi-competent male engineers (40-50 years old), with a very high internal drive and self-motivation for innovation. These leadership types are in their jobs for the love of the work and the art of innovation. Their enthusiasm is visible and noticeable for the rest of the organization. Instead of focusing or promoting their own leadership, coaching abilities and qualities, self-leading and self-motivated employees were preferred and encouraged in all companies. Statements like; "*you are responsible for your own success*", underscores the importance of the employees being proactive in these companies, rather than being managed and lead as suggested by literature [2]. Especially in the early innovation stages, great freedom in work and self-management were emphasized as important. At the same time, all companies reported to have a preference for an open and involving leadership. The case companies have a flat organizational structure, which in turn supports this preferred leadership style with self-leading employees. Leadership also affects a company's organizational culture and climate, which in turn is another important factor which enables or hinders innovation as a process. It encompasses factors of motivation and managerial control, and is also tied to the companies' missions, goals and strategy statement [9]. In all companies, it was found that innovation was either an explicit part of mission or goal statements, or reported by the interviewees to be an inherent part of the companies' strategies and values. This view was supported by relatively large R&D budgets, and the

continuous drive to develop new products and services or new ways of solving customers' problems.

When it comes to motivation, all companies, except company A, cultivate success stories highly to build company culture and loyalty. In addition to public praise, all five companies use different forms of ad hoc rewards for great achievements like gift certificates or restaurant meals to motivate team spirit, cake for successful projects, or T-shirts to the entire organization. According to Kelley and Whittman, rewards may be an effective way to motivate and build team spirit [28]. In addition, both managers and employees reported to have a high level of self-motivation for the love of the work. They expressed a genuine love for creating new solutions, the challenge of innovation inspires, to invent new things and to enjoy that no days are alike. A general dislike for the assembly line way of thinking and working was further reported as a factor which they find motivating when working with innovation. Another important factor concerning motivation for innovation concerns the companies' perception of a real or perceived crisis, or time pressure. All companies reported that some kind of crisis was often necessary to bring new ideas to the table, which can be underscored by the statement; "*Diamonds are formed during high pressure. When we have little time, we are forced to think in new ways*". This finding is in accordance with the field of change management, in which a real or perceived crisis is regarded as a prerequisite for a successful change in the organization.

4.2 Innovation in teams

Leadership also affects how teams are formed and performed within an organization [28]. The case companies differ when it comes to how innovation teams are formed. In some of the companies, the teams are appointed by the management group, in other companies, teams are formed more freely and the project manager chooses the team. Important factors for team composition are formal competence, extensive hands-on experience, and availability (time). Some of the companies reported that in some projects, they deliberately pair off new-comers with experienced personnel to benefit from more out of the box thinking. All companies work multi-disciplinary in their innovation teams, which mean diversity in both function and profession. Company E is dominated by engineers in different functions, but has some additional professions involved. The remaining companies have a greater diversity of professions in their companies, and also in their innovation processes. They involve not only engineers from a broad variety of functions, but also skilled workers from different trades relevant to their business. Diversity is by both researchers and practitioners considered to enhance creativity and innovation [13, 28]. Once the team is formed, all companies reported that they have specialized roles in each project. They also prefer to let the team members' work with the things they do best, to make the most out of their competence.

Team collaboration and communication is mostly carried out by formal and informal meetings. Formal meetings are carried out on a regular basis, but especially the informal meetings over a cup of coffee were emphasized as important. Since some of the innovation teams work scattered in different locations, onshore – offshore – different countries/cities, e-mails and video meetings are important. Company D is currently exploring whether blogging may be an effective communication tool, internally and externally. In addition, weekly newsletters were also used by company A, B and D. In the innovation process, everyone's opinions and ideas are equally appreciated. Especially in company B, C, and D which delivers service solutions to their customers, practical experience and skills are highly appreciated. This sometimes leads to employees deciding and making decisions themselves instead of managers in the companies. Due to the openness in the companies, disagreements are allowed

and regarded as necessary for achieving the best possible solution. Further, risk taking is allowed. An important delimitation is that risk taking never is allowed if it can compromise health, environment or safety standards for the companies or for their customers. Being in the offshore sector, safety always comes first. In the early innovation phases however, this is not considered a problem, hence risk taking is important and welcome.

Openness, humor, playful, fun are adjectives used to describe team climate as well as the overall development departments. Company D and E moreover emphasized that good human relations are the seeds to innovation and creativity. Company D reported that they are intrigued by playfulness and how this can be incorporated to enhance their innovation process, but that this aspect has yet to be implemented on a regular basis in their company. The openness and easy going tone in the companies are expected to be contexts that enhance innovation. As Nagano et al. describes, “*Well-structured processes are not sufficient for innovation to take place*” [34]. In sum, both on the leadership and team level the findings correspond well with most of Ekvall's ten characteristics of climate that stimulate innovation [17]. All voices are heard (everyone can propose ideas) and there are few conflicts at personal level in the companies. The area in which the companies differ most from the proposed "ideal", is time to elaborate on ideas in the early innovation phase. Customer pressure to deliver fast solutions renders the companies with little time to explore ideas.

Table 2 below summarizes main findings from the case companies according to degree of innovation structure and key characteristics when it comes to leadership style and how that affects innovation culture in teams.

Table 2 Summary of results

Case companies	Degree of innovation structure	Characteristics innovation in teams	Characteristics innovation leadership
Company A	Structure for front end stage, but not strictly followed	Informal communication, diversity	Intrinsic motivation, involving, enthusiasm, driven by customer challenges
Company B	No specific structure	Ideas are equally appreciated, informal communication, diversity	
Company C	Specialized fuzzy front end concept		
Company D	Some procedures	Ideas are equally appreciated, playfulness, informal communication, diversity	
Company E	Some procedures	Focus on relations, informal communication	

5 Conclusion

Mastering the art of innovation is essential for sustaining a competitive advantage for companies in the manufacturing or service providing businesses. In this study, five companies known for their innovation abilities in the offshore and marine sector in Norway have been investigated when it comes to early innovation leadership and organization. Compared to previous research and findings in literature, the study has revealed that organization of the early innovation phases in companies corresponds by large with recommendations from other researchers and practitioners. The preferred leadership style is low managerial control in the early phases, with great freedom of work and independent self-leading employees. Motivational activities are further important, but practiced in different ways in the companies. Time pressure or crisis was also mentioned as an important motivation factor. Moreover, the genuine love for creating new solutions as expressed by the managers is also expected to be a

motivational factor in these companies. When it comes to composition, all companies work multi-disciplinary with their innovation efforts, both in terms of function and profession. To a great extent, they have specialized roles in the team. Collaboration and communication is carried out both in formal and informal ways – with emphasize on the latter relating to how new ideas are created and developed. An important characteristic is that everyone's opinions and ideas are equally appreciated and practical experience and skills are highly appreciated. Moreover, team climate can be characterized as open, humorous, playful, and fun. Little time is spent to elaborate on different ideas in the early innovation phase, as customer pressure to deliver solutions fast renders the companies with little time to do so. Referring to Table 2, the interviewees picture their innovation leadership regime and team performance by relatively soft characteristics, which are aligned to the low degree of fuzzy front end structure.

Besides the practical implications of these case studies described, this article may have an academic value by adding to body of knowledge concerning preferred innovation leadership and organization styles in successful companies.

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