LAPPEENRANTA-LAHTI UNIVERSITY OF TECHNOLOGY LUT
School of Engineering Science
Degree Programme in Industrial Engineering and Management

Heidi Anttila

CAPTURING INNOVATIVENESS OF EMPLOYEES THROUGH IDEATION CONTESTS

Master's Thesis

Examiners: Professor Tuomo Uotila
D.Sc. (Tech) Satu Parjanen

ABSTRACT

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Keywords: employee-driven innovation, idea management, ideation contest

The objective of this thesis was to study how employees' innovativeness in organization can be enhanced through ideation contests. Need for employee idea capturing arises from tough competition on the market, increasing work complexity and innovation paradigm change. Employees have valuable expertise in their job and organization capabilities. Combined with their close interaction with customers, users and suppliers, employees are an important source of new ideas, which can be further developed into innovations. The ability to utilize employees' ideas brings a competitive advantage to the organization. Ideation contests can be used to stimulate employees' innovativeness. Advanced information and communication technology aids idea sharing and collaboration. A proper idea management system enables idea handling in a controlled way.

A single-case study with an explanatory approach was used as the research strategy. Qualitative and quantitative research methods were used to complement each other in data collection and analysis. The aim was to gather user experiences of ideation contests and idea management tool in the case organization and make development proposals based on the results. Data were collected by two user experience surveys and seven semi-structured interviews with selected active idea management tool users.

Based on the results, idea management tool users are happy with current ideation contests and idea management tool, but there is also room for improvement, especially in providing feedback of proposed ideas and promoting contests and the tool. Knowledge sharing was considered the main incentive to share own ideas. Employees' innovativeness in organization can be enhanced by strengthening their senses of capability, community and appreciation. Monetary or non-monetary recognition can be used as complementary motivators to advance idea-sharing.

TIIVISTELMÄ

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TYÖNTEKIJÖIDEN INNOVATIIVISUUDEN TALTEENOTTO IDEOINTIKILPAILUJEN AVULLA

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Hakusanat: työntekijälähtöinen innovaatio, ideoiden hallinta, ideointikilpailu

Tämän opinnäytetyön tarkoituksena oli tutkia, miten työntekijöiden innovatiivisuutta organisaatiossa voidaan parantaa ideointikilpailujen avulla. Tarve työntekijöiden ideoiden talteenottoon syntyy kovasta kilpailusta markkinoilla, työn monimutkaistumisesta ja innovaatioparadigman muutoksesta. Työntekijöillä on arvokasta osaamista omasta työstään ja organisaation kyvyistä. Yhdistettynä tiiviiseen vuorovaikutukseen asiakkaiden, käyttäjien ja toimittajien kanssa työntekijät ovat tärkeä lähde uusille ideoille, joista voidaan kehittää innovaatioita. Kyky hyödyntää työntekijöiden ideoita tuo organisaatiolle kilpailuetua. Ideointikilpailuja voidaan käyttää stimuloimaan työntekijöiden innovatiivisuutta. Kehittynyt tieto- ja viestintätekniikka helpottaa ideoiden jakamista ja yhteistyötä. Asianmukainen ideoiden hallintajärjestelmä mahdollistaa ideoiden käsittelyn järjestelmällisesti.

Tutkimusstrategiana käytettiin selittävää yksittäistapaustutkimusta. Tutkimusmenetelminä tiedonkeruussa ja -analysoinnissa käytettiin laadullisia ja määrällisiä menetelmiä, jotka täydensivät toisiaan. Tavoitteena oli kerätä käyttäjäkokemuksia ideointikilpailuista ja ideoiden hallintatyökalusta kohdeorganisaatiossa ja tehdä parannusehdotuksia tulosten pohjalta. Tutkimusaineisto kerätiin kahdella käyttäjäkyselyllä ja haastattelemalla seitsemää aktiivista ideoiden hallintatyökalun käyttäjää puolistrukturoidulla haastattelulla.

Tulosten perusteella voidaan todeta ideoiden hallintatyökalun käyttäjien olevan tyytyväisiä nykyisiin ideointikilpailuihin ja ideoiden hallintatyökaluun. Parantamisen varaa kuitenkin on erityisesti palautteen antamisessa ehdotetuista ideoista sekä työkalusta ja kilpailuista tiedottamisessa. Tiedon jakamista pidettiin tärkeimpänä vaikuttimena omien ideoiden jakamiseen. Työntekijöiden innovatiivisuutta organisaatiossa voidaan parantaa vahvistamalla heidän kokemiaan tunteita pystyvyydestä, yhteisöllisyydestä ja arvostuksesta. Rahallista tai muuta kuin rahallista tunnustusta voidaan käyttää täydentävinä keinoina ideoiden jakamiseen kannustamisessa.

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1 INTRODUCTION

Innovativeness is a prerequisite for a company to survive and succeed in the global competitive markets. Currently, whole innovation paradigm is changing. Previously companies have relied solely on internal Research and Development (R&D) in bringing new innovations to market first, and company intellectual property has been carefully protected so that others cannot benefit from it. In contrast to the above described closed innovation principles, the open innovation paradigm promotes collaboration and exchanging intellectual property with people inside and outside the company. Innovations do not need to originate from the company's R&D, but the ability to utilize available ideas from others and getting the benefit of sharing own ideas bring the profit. (Chesbrough 2003, xx, xxvi.)

Companies can no longer rely on success in the past or current exquisite products, processes or services. The more novel ideas with high quality are presented, the better chances there are to succeed. On the other hand, a high number of ideas makes selection of the ones to be implemented difficult. (Boeddrich 2004, 274; Schulze, Indulska Geiger & Korthaus 2012, 3.) Therefore, companies must pay attention also to systematic idea filtering and evaluation and finally to proper implementation. The success of new implemented idea cannot be taken for granted, so companies must have tolerance for risk-taking and continuous flow of new ideas. Utilizing employees' knowledge in generating and sharing new ideas is discussed in this study in the light of experiences in the case company and relevant literature.

1.1 Background

Ideas are children of the moment, so it is crucial to capture them instantly when they appear (Soukhoroukova, Spann & Skiera 2012, 110). The ability to capture employees' knowledge provides a competitive advantage to the company due to knowledge's uniqueness, path-dependent nature, ambiguousness and difficulty of imitation and substitution (Cabrera & Cabrera 2002, 688). Most of the knowledge lies in know-how and interaction between individuals. Globalization, technological development and increased interest in individual involvement provide opportunities for diverse interaction between people and communities, enhancing innovativeness.

Increasing the level of automation of simple tasks makes workplaces more complex than before. Therefore, the human capital value becomes more important also on lower organization levels. At the same time, employees are more willing to use their full potential and develop themselves continuously to keep pace with the changing working environment and to get satisfaction from work. (Kesting & Ulhøi 2010, 66.) This is in line with the assumption that satisfied employees are eager to take additional tasks (Weigt-Rohrbeck & Linneberg 2019, 823). Job satisfaction can be increased by providing learning and innovation possibilities (Høyrup 2010, 145). Simultaneously employees' commitment to the company and its goals grows (Locke & Latham 1990, 240).

1.2 Objective of the study, research questions and limitations

This study concentrates on the fuzzy front end of the innovation process and specifically on using ideation contests to capture employees' knowledge in creating new innovations. The main focus of this study is on idea generation and evaluation. The innovation implementation phase is discussed briefly, as it is an important part of the innovation process. The objective of the study is to find out how employees' innovativeness in organization can be enhanced through ideation contests by exploring employees' experiences of idea management tool and ideation contest concept in the selected case company. Contests are called ideation challenges in the case company. Results are reflected on existing literature on the topic. Based on the results, current strengths can be identified and development actions proposed. In this thesis, terms "ideation contest" and "innovation contest" are used interchangeably depending on the source of information. Both are applicable in this context. The main research question is:

> *How to enhance employees' innovativeness in the organization through ideation contests?*

To get a comprehensive view on the topic, the aim is to answer also following supporting research questions:

> *Which factors affect employees' willingness to share their ideas?*

How users experience ideation contests and idea management tool?

How ideation contests and idea management tool could be developed to encourage employees to share their ideas more?

The study is limited to the case company, so it represents only one company's particular employees' opinions. Results may be useful also for other organizations, but applicability needs to be assessed case by case depending on the context. Contents of proposed ideas in ideation challenges are not discussed in this study.

1.3 Case company introduction

The case company is a large international company that operates globally in the business-to-business environment in manufacturing, maintenance and service businesses. The company has more than 60 000 employees working in more than 60 countries. The company has a strong R&D organization with operations centralized in seven hubs in six countries. R&D expenditure is 1,8% of sales, and the company is holding more than 3000 patents. Traditionally new innovations are generated, developed and introduced by the R&D department, whereas continuous improvement is an ongoing effort in all departments and units. The importance of collaboration regarding innovations has been acknowledged, and the company has a wide network of partners to work with.

The company is taking open innovation approach and follows the trends to be prepared for changes in the market. One step towards more open innovation is to invite all employees along to innovate. Therefore, the concept of ideation challenges with varying themes has been established. Challenges are arranged twice a year on a digital platform, so that any employee with the company e-mail address can join the challenge regardless of job function, position or physical location. The platform is called idea management tool in this study, and it is owned and maintained by the R&D department. The first ideation challenge that was open for all employees was arranged in spring 2020 with the theme 'health and well-being' and the second challenge in autumn 2020 with the theme 'digital experience'. The target for the year 2020 was

to have 2000 idea management tool users and receive ten patents based on ideas provided in ideation challenges. Because of the time needed for idea development, there was no target set for new product implementation. The aim is to gradually increase the number of users to 20 000 and the number of implemented new products or services to 40 in four years.

The case company has pointed out several needs for innovations in the domain, such as technological disruptions and changes in the business environment, changes in customer needs and expectations and changes in people's needs in general. Identified reasons to involve employees in the innovation process in the case company are that

- employees are experts in their field and, therefore, their voice and ideas need to be heard
- collaboration on novel ideas within and between global and local units benefits all
- innovation activities create collective learning and a wider understanding of various topics
- creativity and employee satisfaction can be increased by the open innovation culture
- innovative workplace atmosphere impacts positively in retention rate and employer image
- continuous improvement is a necessity to succeed

As the idea management tool and involving all interested employees in innovation creation via ideation challenges are novel in the case company, study on user experiences is reasoned and can be found interesting and beneficial for the case company. An emerging trend is that companies are changing their innovation approaches from closed and carefully protected innovation processes to more open knowledge sharing and collaboration. This is supported by the case company’s recent announcement about the importance of capturing the wisdom, strength and views from everyone, which makes the study topical and relevant.

1.4 Structure of thesis

This study consists of the literature review and empirical research in the case company. The study is divided into seven chapters. Introduction, as the first chapter, offers an overview of the topic, explains the purpose of the study and introduces the case company. Literature is reviewed in chapters 2 and 3. Chapter 2 introduces innovation and frameworks for employee-driven

innovation, idea management and innovation contests. In chapter 3, motivation factors related to idea sharing in organizations are discussed first at the general level and later concentrating on motivation factors for participation in ideation contests. Research methodology with a detailed description of performing the empirical part of the study is presented in chapter 4, and results of the empirical part of the study in the case company are summarized in chapter 5. Findings are discussed and reflected upon the literature and improvement proposals given in chapter 6. In the same chapter quality of the study is evaluated. In chapter 7, conclusions are drawn, and directions for future research on the topic are proposed.

2 THEORETICAL FRAMEWORKS

Polanyi (1958, as cited in Nonaka & Takeuchi 1995, 59-60) has categorized knowledge into explicit and tacit knowledge. Explicit knowledge is codified and easy to transmit from one to another by words and numbers, whereas tacit knowledge is personal, ambiguous and difficult to transmit to others. Most of the knowledge is considered tacit, while explicit knowledge represents only the tip of the iceberg of entire knowledge. Tacit knowledge is essential in knowledge creation and thereby in creating new innovations (Nonaka & Takeuchi 1995, 56, 235). Both forms of knowledge require effort from the knowledge owner to share it. Continual dialogue between explicit and tacit knowledge is a driver for new idea creation, which makes idea sharing and knowledge sharing closely related (Nonaka 1994, 15).

Due to advanced information and communication technology (ICT), more and more tacit knowledge can be transformed into codified information and then processed by computers. In addition, changes are happening faster than before. Challenge is to recognize and select worthwhile pieces of the enormous amount of information and figure out how to exploit it and react agilely to rapidly changing rules and problems. This requires a new type of tacit knowledge, which can be supported by experience-based learning. (Lundvall & Nielson 2007, 209.) In addition to shorter product cycles, increasing customer demands call for new innovations (Stieglitz & Hassannia 2016, 4272).

Long-term competitiveness requires learning capability, which has to be managed as a part of knowledge management. The aim is not to control what employees learn but to give an organizational and cultural framework, which leaves employees space for creativity and interaction. Job rotation, inter-divisional teams, sharing responsibility and lowering hierarchy can be used as methods in organizational learning. However, key-factor in creating a learning culture is people-oriented managers working in collaboration with human resources (HR) and R&D departments. (Lundvall & Nielson 2007, 219-220.)

2.1 Innovation

Amabile and Pratt (2016, 158) have defined creativity as "the production of novel and useful ideas by an individual or small group of individuals working together" and innovation as "the successful implementation of creative ideas within an organization". According to Nonaka and Takeuchi (1995, 239-240), knowledge can be created only by individuals but organization amplifies it and group functions operate as a synthesizer. Therefore, organizations have to support and stimulate employees' knowledge creation skills and provide arenas for interaction. Similarly, de Sousa, Pellissier and Monteiro (2012, 43) emphasize the importance of interaction by saying that "innovation arises from ongoing circles of exchange, where information is not just accumulated or stored, but created. Knowledge is generated anew from connections that weren't there before."

Innovations can be divided into incremental and radical innovations. Incremental innovations are rather minor improvements and modifications to existing solutions, whereas radical innovations are fundamental changes. Innovation is context-bound so that, for example, an existing product or known process can be an innovation when used in a different context. (Høyrup 2010, 145.) Innovations can also be categorized based on the subject to be developed. The typical way is to divide innovations into four groups (Sundbo 2003, 98):

- *Product innovations* are new products that are introduced to the market.
- *Process innovations* are new production processes that have been implemented, such as new ways of working.
- *Organizational innovations* are new forms of organizations or new management philosophies.
- *Market innovations* mean an organization's new behavior on the market, such as a new strategy or new marketing methods.

Innovation processes are complex and not clearly defined. Often, the innovation process is divided into two phases: idea generation and implementation. (Axtell, Holman, Unsworth, Wall, Waterson & Harrington 2000, 266.) Holman, Totterdell, Axtell, Stride, Port, Svensson, and Zibarras (2012, 177,179) divide the innovation process ahead into three main phases: idea

generation, idea promotion and idea implementation. In the idea generation phase, a new idea is created. In the idea promotion phase, the new idea is presented to get it embraced by others and gain support for it. Idea realization can be utilized in this phase, for example, by a systematic introduction and gathering resources for its implementation. In the implementation phase, the new idea is integrated within the organization. Providing access to needed information and resources, support and opportunities, such as learning and growing, will increase empowerment and thereby enhance employees' innovative performance (Echebiri, Amundsen & Engen 2020, 14).

Organizational innovativeness and individual creativity are highly interdependent properties, and both require adequate resources, skills or processes to utilize available knowledge and motivation as a driver to evoke creativity and generate innovations. Individual creativity feeds organization innovations while the organizational environment fosters individual creativity. This is presented in Figure 1. Individual motivation makes employees put their effort into the task, whereas organizational motivation to innovate appears in openness to new ideas and systematic development of them. Individual skills represent technical capabilities and talents to perform tasks. To utilize the skills for creativity, creativity-relevant processes are needed. Those include cognitive skills, perceptual skills and thinking skills, which enable to make unusual associations and take risks. Organizational resources include people, money, infrastructure, access to needed information and time for creative work. To utilize and combine resources in a new way for innovations, the organization needs skills in innovation management. This means management practices that support creativity on different organization levels such as autonomy, collaboration, feedback and recognition. (Amabile & Pratt 2016, 160-162.)

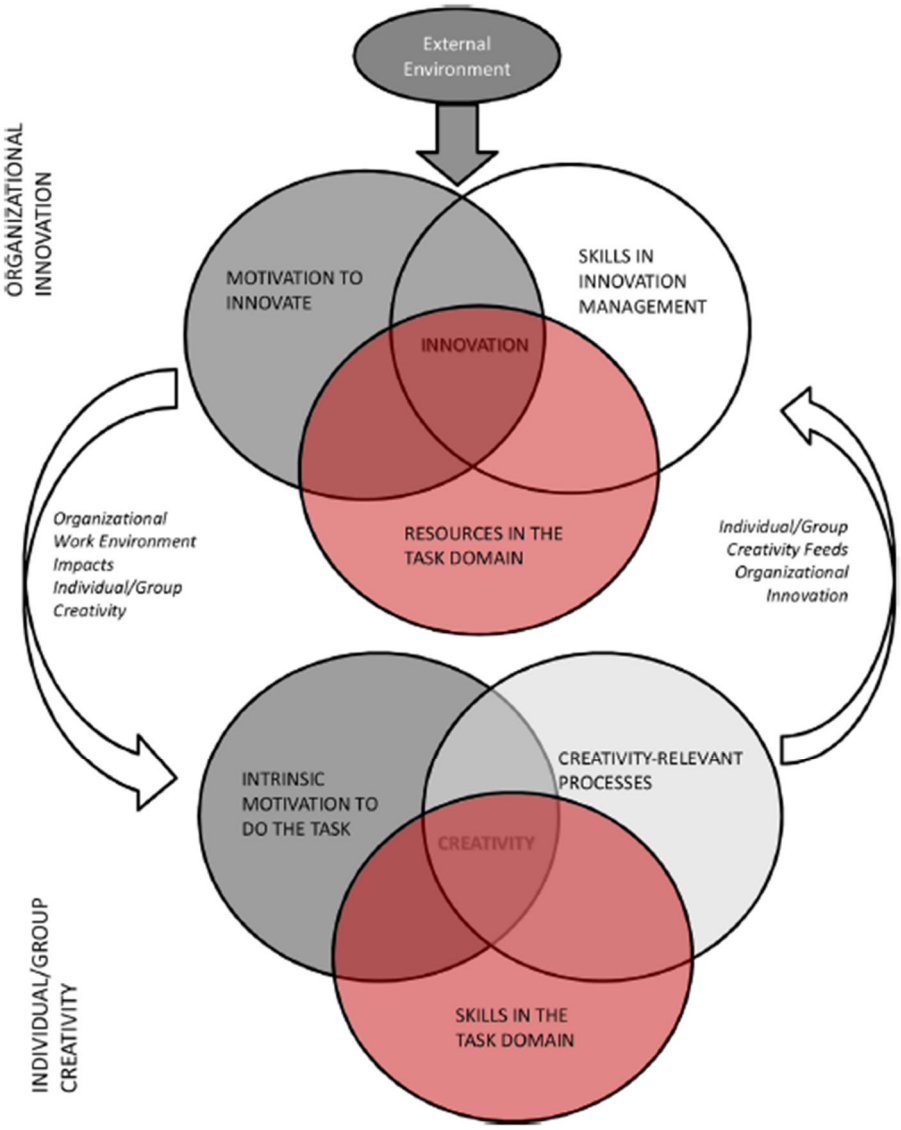

Figure 1 An abstraction of the components influencing innovation and creativity and how they interact (Amabile & Pratt 2016, 161)

Lundvall and Nielson describe the innovation process as an interactive learning process where stakeholders increase their competence via engaging in the innovation process. By sharing information and using skills and competencies, these characteristics evolve rather than diminish. (Lundvall & Nielson 2007, 214.) Innovative learning produces new knowledge or skills contrary to adaptive or reproductive learning in which information has been existing, but it is transferred to an individual who has not had it before (Høyrup 2010, 152). Customer need -related information is often difficult and costly to acquire, use and transfer from customers to producers, and it is therefore called sticky information. Reasons for information stickiness can

be the type or amount of information to be transferred or information seekers' and information providers' characteristics, such as the ability to acquire or willingness to share information. (von Hippel 1994, 430.)

Though innovation usually has a positive association, all innovations are not desirable, and all ideas do not meet the requirement to become an innovation. The usefulness of an idea depends on domain and timing. (Amabile & Pratt 2016, 158; Høyrup 2010, 145.) Therefore, people who are responsible for innovation-related decisions in organizations must have insight into the organization's strategy, current routines and future vision (Kesting & Ulhøi 2010, 71). Inadequate knowledge of the organization's strategy and market trends may lead to unfavorable innovations and waste of resources (Kesting & Ulhøi 2010, 73).

2.2 Employee-driven innovation

Employee-driven innovation (EDI) can be defined as the generation and implementation of novel ideas that any employee in an organization can initiate individually or in group without having innovation-related tasks included in their job description (Kesting & Ulhøi 2010, 66). According to The Danish Confederation of Trade Unions research report (2007, 9), the employees' contribution to the innovation process is active and systematic in EDI. It is assumed that all employees have the potential for creative thinking and the ability to take part in changes and innovation (Amundsen, Aasen, Gressgård & Hansen 2014, 26). Employees at any organizational level can participate in making innovations. It is not a privilege or duty of only the R&D department or management.

Employees have a lot of experience-based knowledge and latest information which the managers might lack because employees work closely with the market, customers, users and materials on a daily basis. Practical knowledge can be shared in an organization's informal internal networks. (Høyrup 2010, 144.) At the same time, employees are to be encouraged to interact in arenas where ideas and idea-blanks from external networks can be captured (Amundsen et al. 2014, 30). Reflecting, social interaction and exchange are key elements in the generation of employee-driven innovations (Kesting & Ulhøi 2010, 66). As the number of

"ordinary" employees is large compared to the number of persons in the management or R&D department, there is remarkable creative potential in them (Kesting & Ulhøi 2010, 73).

Like any innovation, also EDI can be radical or incremental (Høyrup 2010, 149), even though Smith, Ulhøi and Kesting (2012, 225) propose that EDI should include only radical innovations, which require major changes in business models. EDI can be of any type: product, process, organization or market related (Høyrup 2010, 149). Especially radical innovations are often employee-driven rather than user-driven. Following user needs usually leads to incremental improvements in existing products or processes, but with more specific knowledge about organization capabilities combined with identified user needs provides fruitful ground to generate radical innovations. (Kesting & Ulhøi 2010, 69.) EDI follows the bottom-up concept but needs support, recognition and organizing from the management. (Høyrup 2010, 149.) The bottom-up organization is characterized by flat structure, great autonomy and entrepreneurially minded employees in contrast to top-down organizations, which are hierarchical, and in which knowledge is created only by top management and shared downstream in the organization. (Nonaka & Takeuchi 1995, 125-126.)

EDI is more than an initiative box or continuous improvement practice (Kesting & Ulhøi 2010, 66-67; Smith et al. 2012, 225). Idea novelty and innovation aspect differentiate it from continuous improvement, and more active employee participance differentiates it from the traditional initiative box approach (Kesting & Ulhøi 2010, 66-67). An idea to initiate EDI may appear suddenly by accident, or it may be induced and evolved systematically. (Høyrup 2010, 149.) To evolve an idea into innovation requires further development and promotion besides just throwing an idea in the air (Smith et al. 2012, 225-226). Keeping employees updated on the organization's status, targets, and prevailing market conditions, help them to identify relevant and applicable knowledge from external sources (Gressgård, Amundsen, Aasen, & Hansen 2014, 643).

2.3 Idea management

Even though creativity requires freedom and disruption, it is necessary to manage also the fuzzy front end of innovation systematically to achieve success. According to Boeddrich (2004, 275),

the following requirements have to be met before making a decision on innovation project execution.

- Idea is linked with company strategy.
- Outcome benefits customers and users.
- Ideation phase is structured by means of
    - clear criteria for go-ahead decision
    - organized way of collecting ideas
    - clear responsibilities in decision making.

It is important to have a strategy on innovation creation starting from how to gather knowledge until systematic development and implementation of ideas. This requires setting targets and establishing a measurement system for innovation creation and follow-up of the progress. (The Danish Confederation of Trade Unions 2007, 18.) Incentive policy and clear roles in different phases of innovation should be regarded as a part of the strategy. Benefit from idea management system may be difficult to measure because it will take a long time to implement ideas and see if the selected ideas are profitable enough to cover the costs invested in the system.

Sandström and Björk (2010, 312) consider an idea management system as a "structured support of the ideation phase". An idea management system should not only concentrate on gathering ideas, but to support idea providers throughout the innovation process: idea evaluation, development, finetuning and implementation (Ciriello, Richter & Schwabe 2016, 4262; Gressgård et al. 2014, 639). This can be aided with a transparent idea management tool, which enables any employee to see all proposed ideas for inspiration and support as well as to follow the status of idea processing (Ciriello et al. 2016, 4266; Gressgård et al. 2014, 639). Concentrating only on maximizing the number of proposed ideas may lead to deterioration in the quality of ideas, overloading idea evaluators with poor or moderate ideas. On the other hand, maintaining employees' interest in participation to enable a continuous flow of new ideas over time may be challenging. (Beretta, Björk & Magnusson 2018, 391.)

2.3.1 Idea management tool

ICT development has been a contributor to advanced interaction between employees enabling knowledge sharing and furthering openness and collective ideation (Bergendahl & Magnusson 2014, 529; Cabrera & Cabrera 2002, 687). However, it is not enough to just establish an idea management system; it requires active promotion and employee encouragement from management to use it (Beretta et al. 2018, 407; Cabrera & Cabrera 2002, 687). Especially middle management plays an important role in integrating digital idea management tool into everyday work by showing an example and creating a positive attitude towards it as well as creating a trustful and open atmosphere in the organization so that everyone feels comfortable using the tool (Bäckström & Lindberg 2019, 536-537).

The use of interactive idea management tool fosters openness, cooperativeness, commitment, autonomy and trust, which are related to productive EDI. This requires that the tool is used regularly as a part of normal routines, so it must be easy to access and use. Feedback received via the tool indicates that given ideas matter; otherwise the willingness to give input dies down. Idea management tool performance needs to be monitored to see if it reaches set targets and to emphasize its importance in the organization and management's interest in it. Idea management tool governance requires resources, which has to be taken into account before implementing the tool. (Gressgård et al. 2014, 641-642.) Idea management tool provides a neutral interface between employees and decision-makers so that employees know one channel to share their ideas and ideas won't disturb the daily work of managers (Boeddrich 2004, 279). However, using only a digital tool to share ideas may lead to misunderstanding of the idea and further to poor absorption (Beretta et al. 2018, 392). Therefore, human interaction cannot be discarded.

2.3.2 Idea evaluation and decision-making

Organizations that use structured idea collection and evaluation systems are found to be more effective in the innovation process and especially in assessing ideas (Schulze et al. 2012, 11). Idea assessment is one of the most important phases in the innovation process (Onarheim & Christensen 2012, 672; Schulze et al. 2012, 11). Lack of resources in idea assessment or poor knowledge on how to use idea management system reduces assessment process efficiency as

fewer ideas get properly assessed (Schulze et al. 2012, 12). In the worst case, idea management system causes additional costs and wasted work if not properly integrated with people and processes (Thomke 2006, 24, 31). However, too restrictive idea management tool decreases autonomy, which is one of the innovative organization culture characteristics (Gressgård et al. 2014, 644). The idea management system has to be balanced with just enough structure and flexibility.

It is recommended to have several members in idea evaluation, selection and tracking board representing different expertise and functions in the company so that ideas are reviewed comprehensively from different perspectives. Interaction between evaluators is beneficial to increase the quality of evaluation. (Soukhoroukova et al. 2012, 102.) Evaluators need to be aware of already ongoing initiatives and development actions in the organization to avoid overlapping development work. They need to receive a clear and understandable description of proposed ideas to evaluate related risks and opportunities, to compare ideas with each other and to make the decisions on which ideas will be developed further and implemented. (Ciriello et al. 2016, 4262, 4265-4266.) Proposed ideas may vary a lot within a given theme, which makes idea comparison and selecting the best ones difficult. Unambiguous evaluation criteria help to evaluate ideas objectively.

Since many of the employee-generated ideas are not viable, it requires filtering to avoid decision-makers overloading. Decision-making on strategical innovations must be held the responsibility of fewer people to have consistency on decisions in alignment with the organization's strategy and to ensure the ability to make decisions professionally. When decisions are made by a neutral party, the risk of conflicts in teams or between departments as well as sub-optimization can be mitigated. Limiting authority in decision-making underlines the power of decision-makers, which may be necessary to preserve authority in general. (Kesting & Ulhøi 2010, 74.) Especially in the innovation exploitation phase, hierarchical decision-making is preferred due to its efficiency (Parjanen, Saunila, Kallio & Harmaakorpi 2020). Therefore, the final say in innovation decisions is better to be kept as management's responsibility while employees can participate by providing information, proposals, sub-decisions and different perspectives.

2.4 Innovation contests as ideation booster

An innovation contest is defined as a competition of participants providing a solution for a task defined by the organizer within a given timeframe. Idea submissions are evaluated and ranked by the organizer's evaluators based on evaluation criteria, and the submitter of the idea that best meets the criteria is awarded. Reciprocally the organizer is permitted to utilize and exploit proposed solutions. (Stieglitz & Hassannia 2016, 4272; Terwiesch & Xu 2008, 1529.) An ideation contest is a method of intellectual stimulation, which can be used to trigger idea generation. Intellectual stimulation makes employees re-think routines and observe surroundings to find problems to solve. (de Jong & Den Hartog 2007, 50.) In four-organization research, Campos-Blázquez, Morcillo, and Rubio-Andrada (2020, 24) identified four reasons to arrange employee ideation contests: utilization of collective intelligence, finding hidden talents, improving cross-departmental collaboration and innovation culture promotion.

Modern information and communication technology enable reaching a large number of people with different expertise and skills globally, providing a platform to organize online ideation contests with reasonable costs (Hutter, Hautz, Füller, Mueller & Matzler 2011, 3; Möslein & Bansemir 2011, 17). Employee innovation contests are suitable when the aim is to receive excellent ideas, though with a smaller quantity, whereas contests open to anyone are useful when the number of good ideas with a wide range of perspectives is important but among which the most brilliant ideas might be missing. A limited number of ideas are also preferred when evaluation or implementation resources are scarce. (Stieglitz & Hassannia 2016, 4278.) In ideation contests benefits of idea diversity by large participant group outweighs the negative impact of participants' underinvestment (Terwiesch & Xu 2008, 1537).

Onarheim and Christensen (2012) have studied employee voting usability in idea evaluation. They found a correlation between ratings made by experienced evaluators and employees. They also identified two biases that might affect the evaluation result if employees themselves evaluated the ideas instead of the expertized evaluation team.

- The visual complexity bias means that visually complex idea may be considered creative even though it is not giving a false positive result in evaluation. Experienced evaluators

are less affected by visual complexity bias due to their expertise and capability to use more sources of knowledge in evaluation. (Onarheim & Christensen 2012, 663.)

- The ownership bias means that if the evaluator has been involved in idea generation, he/she more likely rates the idea higher than the others. When more people are evaluating the ideas, the impact of ownership bias is diminished. (Onarheim & Christensen 2012, 663-664.)

In recent innovation contests, community functionality has become more common, which means that participants can interact with each other during the contest (Bullinger, Neyer, Rass & Möslein 2010, 292). What comes to idea development, the whole is more than the sum of its parts. When participants can contribute to each other's idea development by giving feedback or improvement proposals, the result is usually better than the initial solution and might be even better than the best individual input. This is called "wisdom of the crowd". (Yi, Steyvers, Lee, & Dry 2012, 452.) Reflection of own ideas inspires one to seek alternative approaches (Soukhoroukova et al. 2012, 104; Stieglitz & Hassannia 2016, 4277). Interaction can also stimulate other participants' creativity.

Ideation contests are not always successful. Reasons for failure might be too ambiguous challenge description, poor communication plan or insufficient middle management involvement. (Campos-Blázquez et al. 2020, 27.) If participants feel unlikely to get rewarded financially, it might limit the effort they put into the contest. This can be mitigated by an appropriate reward system. In the ideation contest also other participants than the winner can be rewarded, or several iteration rounds can be organized so that minimum effort may be exerted in the first round and the level of investment is increased in the next rounds when less participants are remaining and winning probability increases. (Terwiesch & Xu 2008, 1542.)

Collaboration and competition

In a purely competitive approach, participants are competing individually against each other, targeting to win on their own, whereas in a purely collaborative approach, participants are working together to reach a common goal (Bergendahl & Magnusson 2014, 531). Typically competition reduces collaboration, but both competition and collaboration can occur

simultaneously (Hutter et al. 2011, 5-6). Based on research by Bullinger et al. (2010, 299-300), a very high and very low cooperative orientation support innovativeness while a medium degree of cooperative orientation leads to lower innovativeness. Reasons behind this are that highly competitive participants are focused on the contest and solution or consider themselves pre-eminent compared to competitors so that they don't believe in benefiting from cooperation, whereas highly cooperative participants are able to utilize their wide networks and build bridges over weak linkages. Participants with medium degree of cooperative orientation fall in between those two, for having too little time to concentrate deeply or truly interact. To increase the winning probability, competitively oriented participants usually come up with a large number of ideas or many appealing ideas. Fear of other participants exploiting revealed knowledge may lead the competitive-oriented participant to refrain from collaboration. (Hutter et al. 2011, 12.) Reasons to collaborate with other contest participants are the willingness to socialize and to feel connected to similarly thinking peer competitors (Hutter et al. 2011, 6).

Hutter et al. (2011, 16) have introduced the term communitition, which combines the best characteristics of both competitive and cooperative orientation. Engagement and focus on winning represent the competitive orientation, whereas knowledge sharing and networking represent the cooperative orientation. They found a positive correlation between communition and success in ideation contests in their research and propose that identifying communititors based on participants' behavior in ideation contest might be useful in detecting high innovation potential. Combining cooperation and competition in an organization requires intentional changes in ways of working, organization structure, processes and mindsets (Bergendahl & Magnusson 2014, 533).

Replacing direct individual rewards with indirect rewards, such as resources to execute good ideas, can be used as means of combining competition and collaboration. Another means is to move the competition from the individual level to the team level. Also, rewarding active contribution instead of only idea generation would increase willingness to share knowledge. (Bergendahl & Magnusson 2014, 544.) Terwiesch and Xu (2008, 1538-1539) suggest performance-contingent reward to be used instead of fixed price reward in small ideation contests with a limited number of participants to increase participants' willingness to put more effort in the contest in order to influence probability to get a reward, as well as to the size of the

reward. This is expected to yield higher profit for the contest organizer. In contrast "winner takes all" reward system activates persons with high expertise to participate as they consider it probable to win the price. Therefore, allocating full price to the best solution would be beneficial in larger contests. (Terwiesch & Xu 2008, 1534.) However, there is no number of participants specified for small or large contests.

3 FACTORS AFFECTING ON IDEA SHARING

There are several reasons why employees do not share their knowledge. They may feel not getting benefits for themselves, or it has not been adapted as a natural part of their everyday work. Lack of time or insufficient skills on how to do it may prevent knowledge sharing as well as missing support from management. (KPMG 2000, 2.) Fear of losing the privilege of having the knowledge and lack of needed resources prevent knowledge sharing (Szulanski 1996, 31). Though, knowledge sharing should not be avoided for fear of losing it because its value actually increases when it is shared (Cabrera & Cabrera 2002, 691). Motivation to propose ideas decreases if proposed ideas are never implemented (de Jong & Den Hartog 2007, 58; The Danish Confederation of Trade Unions 2007, 17).

There are also several factors that motivate employees to share their ideas and participate in ideation contests. In addition to individual characteristics, organizational factors have a huge impact on employees' creative behavior. The transformation from a non-innovative organization to a highly innovative one does not happen overnight because it requires changes in organizational culture, ways of working and organization structure. Suitable methods for each organization need to be designed case by case.

3.1 Four antecedents for employee-driven innovation

Smith et al. (2012, 225) have identified four antecedents for EDI: leader support, autonomy, collaboration and organizational norms of exploration. In addition to the above antecedents, rewards have been acknowledged to impact employees' idea generation and implementation (Axtell et al. 2000, 283).

Leader support

The possibility that an idea gets rejected or ignored or turns out to be unprofitable might inhibit employees from sharing their ideas. Leader support is needed, especially in the idea generation phase when employees need to be encouraged to share their ideas and in the idea development and implementation phase when resources need to be granted or decision authority is required.

(Smith et al. 2012, 226-227.) Management support can also be mentoring and idea elaboration together with an employee (Kesting & Ulhøi 2010, 75). However, a leader-subordinate relationship should not be blended with over extensive involvement of the leader. This is a risk, especially in low-hierarchy organizations. (Smith et al. 2012, 232.)

Open communication about company vision and needs provides a fruitful breeding ground for employees to generate ideas that are in line with those (de Jong & Den Hartog 2007, 51-52; Nonaka & Takeuchi 1995, 227). By demonstrating innovative behavior in everyday work, leaders can act as role models. Also, expressing the importance of innovativeness increases employees' creativity (de Jong & Den Hartog 2007, 50-51). Leaders can enhance employee innovativeness by providing challenging tasks, resources, support and recognition (de Jong & Den Hartog 2007, 45, 56).

By participative approach, organizations are able to engage employees (Kesting, Song, Qin, & Krol 2016, 1061; Kesting & Ulhøi 2010, 66). Involving employees in decision-making and delegating tasks to them have a positive correlation with innovative behavior (Arad, Hanson & Schneider 1997, 47; de Jong & Den Hartog 2007, 52-53). When employees are involved in decision-making, they feel more responsible for the outcome and become more committed (Hartmann 2006, 163). Clegg, Unsworth, Epitropaki, and Parker (2002, 416) found employees' role breadth self-efficacy affecting positively in idea generation but interestingly not in implementation, whereas management support was found to have a positive effect on idea implementation but not on idea generation. This is consistent with the conclusion by Kesting et al. (2016, 1062), stating that employee participation stimulates idea generation, which may further lead to innovation, but there is no obvious correlation between employee participation and implementation. Disadvantages in employee participation in the implementation phase can be longer decision-making time leading to delayed implementation, inconsistent decision-making due to several different interests and lack of competence in decision-making.

Autonomy

Freedom is one major factor affecting creativity, and autonomy is one element of freedom in addition to empowerment and decision-making. High autonomy allows employees to perform

their tasks freely within given guidelines. (Martins & Terblanche 2003, 70-71.) Shalley and Gilson (2004, 38) fine down that autonomy on the job may concern the way how the work is to be done or how the working time is to be used. Clear target-setting defines the desired goals, while autonomy in exploring paths to reach them enables finding and creating new ideas (Amabile & Pratt 2016, 162). Autonomy is essential, especially in the idea generation phase. Autonomy can be enhanced by letting employees make decisions and also work outside their formal roles. Too much autonomy, in turn, can cause an employee to forget the organization's targets and lead innovation in the wrong direction. In the implementation phase, autonomy is considered as time to use for the implementation. (Smith et al. 2012, 228, 231-232.)

Collaboration

Collaboration can be defined as "working together and sharing information and knowledge" (Smith et al. 2012, 228). Communication and interaction have a positive effect on creativity regardless of whether the conversation partners are company internal or external contacts. A person, who is exposed to versatile opinions and different approaches, will more likely come up with different and unusual ideas. (Perry-Smith & Shalley 2003, 92, 102.) Trust enables honest communication even in case of disagreement, and conflicts should not be avoided as they offer opportunities for new innovations (Martins & Terblanche 2003, 73). There are different theories on whether homogeneous communities are more innovative than heterogeneous communities. (Martins & Terblanche 2003, 73; Smith et al. 2012, 229.) Smith et al. (2012, 229) propose that both are important in different phases of the innovation process. In the idea generation phase, heterogeneous teams bring more versatile ideas to the table, whereas closer to the implementation phase, homogeneous teams can collaborate easier as they share a similar way of thinking.

Organizational norms of exploration

Organizational norms of exploration refer to organization culture and attitudes. An open and positive attitude towards innovations advances employee creativity. (Smith et al. 2012, 229-230.) Organizational culture consists of shared values and beliefs, which guide employees' behavior without a separate agreement. It defines the boundaries for accepted ways of working,

creates a sense of community and engages employees. (Martins & Terblanche 2003, 65.) Work climate and external contacts enhance employees' innovative behavior as well as a positive and safe atmosphere, which allows taking risks (de Jong & Den Hartog 2007, 57-58).

Open and flexible organization structure, decentralized decision-making and low hierarchy support innovative behavior as well as tearing down silos that hinder interaction between departments (Arad et al. 1997, 47; Parjanen et al. 2020; Shalley & Gilson 2004, 45). In turn, lack of time and other resources hinder employees' innovativeness, and lack of recognition and reward of innovative behavior quickly suppresses innovation initiative and willingness to share ideas (Kesting & Ulhøi 2010, 73-74). In a supportive organizational culture, employees feel comfortable participating and getting their voice heard in the form of new ideas. When employees are allowed to widen their roles towards innovative thinking without fear of punishment or disregard by management, they are willing to do so. (Kesting & Ulhøi 2010, 76.) In a safe environment, mistakes are allowed, and when those are seen as learning opportunities instead of embarrassing failures, mistakes can be turned into progress (Amabile & Pratt 2016, 168-170; de Jong & Den Hartog 2007, 53; Martins & Terblanche 2003, 72).

The use of extensive work-based learning strategies increases employee's work-related know-how, which helps in idea generation. People with high learning motivation get interested in challenging tasks, take ownership to understand and get on top of the tasks and want to develop new skills. (Holman et al. 2012, 181, 187.) Especially control over the job and problem demand positively affects learning strategies and, consequently, to idea generation. This can be enhanced by giving extensive, demanding and versatile tasks to perform and allowing great authority in the job. In addition, problem demand is associated with a higher level of idea promotion. In the idea promotion and implementation phase, leadership and social practices' role is pronounced. (Holman et al. 2012, 186-187.)

Rewards

The value of monetary reward should correspond to the value of shared knowledge. In the case of strategic innovations, ignoring the impact of monetary reward may tempt an employee to resign and use the knowledge for a competitor's benefit. The company must evaluate the

impacts of both events: whether the idea is worth paying decently, or the cost of reward is too high to cover the received benefit. The result depends on the idea's attractiveness in the market, cost of reward and expected benefit for the company. (Bartol & Srivastava 2002, 68.) Fairness in rewarding is crucial to create and maintain trust between the employer and employees (Bartol & Srivastava 2002, 73).

Belief in getting benefit predicts idea-sharing, and belief in getting heard predicts implementation but not the other way around. Getting benefit is seen as a personal level incentive: when employees have to put effort into idea generation and sharing, they consider themselves justified to receive the benefit. In contrast, getting heard requires other people's involvement. When employees feel that they are heard, they are more willing to put more effort into idea implementation. (Clegg et al. 2002, 419.) This is in line with the finding of Axtell et al. (2000, 280-281), stating that individual-level properties have a greater effect on idea generation, whereas group and organizational level properties have a greater effect on the implementation phase. However, participation in decision-making and authority on own work were found to be related to both idea generation and implementation. In contradiction to this, Kesting et al. (2016, 1066, 1069-1072) did not find a positive correlation between employee participation and innovation implementation, as implementation is considered a more controlled phase of innovation. However, they see it obvious that non-monetary incentives can be used to increase employee participation, continuous learning, self-development, knowledge sharing and commitment in the idea generation phase.

Increasing the personal benefit of knowledge sharing or decreasing the effort to do so can be used to enhance knowledge sharing. The benefit does not have to be monetary. It can be recognition or feeling of being able to help others. Effort can be decreased by having an easy-to-use information system, organizing trainings on how to use it and what kind of knowledge is valuable to share and allowing time for knowledge sharing. (Cabrera & Cabrera 2002, 695-696, 700.) If the reward system encourages sharing as many ideas as possible, there is a risk that the quality of ideas will decrease (Cabrera & Cabrera 2002, 697). Rewards, evaluation, support and resources need to be in line and linked to each other to indicate the importance of creative behavior. Giving contradictory signals will confuse employees and decrease their creative activity. (Shalley & Gilson 2004, 42.)

3.2 Intrinsic and extrinsic motivation

Motivation can be divided into intrinsic and extrinsic motivation. Intrinsic motivation drives an individual to take actions when the task itself is interesting and enjoyable. Extrinsic motivation to perform the task arises from external incentives, which can be positive, such as rewards, or pressuring, such as deadlines. (Amabile & Pratt 2016, 160.) Both have a remarkable impact on human behavior. Extrinsic motivation drivers can be monetary rewards or non-monetary rewards, such as reputation and recognition. (Bartol & Srivastava 2002, 66; Zheng, Li & Hou 2011, 61.) Emotions have an effect on intrinsic motivation, especially interest-excitement and joy increase intrinsic motivation (Deci & Ryan 1985, 28).

Kosonen, Gan, Vanhala, and Blomqvist (2014) divide intrinsic motivation within the crowdsourcing community further into three subcategories, which are learning benefits, social benefits and hedonic benefits, and extrinsic motivation into two subcategories, which are recognition from peers and recognition from the organizer. Acquiring information and feedback from others provide learning opportunities (Kosonen et al 2014; Leimeister, Huber, Bretschneider & Krcmar 2009, 206). Online-community relationships and ability to help others bring social interaction benefits and pleasurable experiences, such as enjoyment and mental stimulation, provide hedonic benefits (Kosonen et al 2014). Leimeister et al. (2009, 220) have found recognition from the organizer being more important motivation factor than recognition from the peers.

Informational factors, such as choice and positive feedback, increase intrinsic motivation, whereas controlling factors, such as rewards, deadlines and surveillance, and demotivation factors, such as negative feedback and non-contingencies, decrease intrinsic motivation. However, due to the subjective nature of communication and differences in interpretations, it is not obvious whether an event is experienced as informative or controlling. The reward can be expressed in an informative way, or positive feedback can be experienced controlling, for example, if it contains comparison. (Deci & Ryan 1985, 112.) Consistency and repeat in communication are suggested as an individual's motivation can change rapidly. Motivation changes can be caused by changes in the work environment, effects, meaningfulness or progress

(Amabile & Pratt 2016, 177). Some level of control is required in the implementation phase to forward the progress (de Jong & Den Hartog 2007, 56).

Even though extrinsic motivation factors are generally seen decreasing intrinsic motivation, informational extrinsic motivation factors have a positive effect on intrinsic motivation and, through that, to creativity (Amabile & Pratt 2016, 176). The expected evaluation may also have a positive effect on creativity and intrinsic motivation, especially when evaluation provides constructive information (Shalley & Gilson 2004, 41). Competition-related rewards, which only one can win despite how good job others have done, are seen as the most controlling reward type. A performance-related reward system, in turn, is not seen as detrimental to intrinsic motivation because it focuses on well-done work without separating winners and losers. (Deci & Ryan 1985, 85, 301.)

Deci and Ryan (1985, 29) argue that rewards have a negative effect on intrinsic motivation because the pursuit of rewards constrains true freedom, which is a prerequisite for pure intrinsic motivation. On the other hand, extrinsic rewards may reinforce a person's confidence in one's competence (Bartol & Srivastava 2002, 66). Again, perceived competence and self-determination increase intrinsic motivation (Deci & Ryan 1985, 35). This is in line with Amabile's and Pratt's (2016, 177) argument that combining autonomy with extrinsic motivation factors, which support a sense of competence or deep task engagement, have a positive effect on intrinsic motivation. Boeddrich (2004, 278) claims that only exclusive individual rewards for implemented innovations enhance idea generation by acknowledging the value of the employee to the company.

3.3 Motivation factors for participating in ideation contests

Several studies have identified similar motivation factors in participation in ideation contests such as learning, rewards, self-marketing, social motives and finding new job opportunities (Leimeister et al. 2009, 205-206; Zheng et al. 2011, 60). It is crucial to formulate the innovation challenge accurately and in a way that arouses interest and stimulates ideation and motivation to participate, and evokes relevant expertise (Campos-Blázquez et al. 2020, 25). If the challenge is too specific, requiring high knowledge on a certain topic or too wide and vague to get caught,

the number of participants will decrease. The theme of a challenge should be such that participants can bring something new to it.

Zheng et al. (2011, 62-66) have identified four contest attributes that may affect person's willingness to participate in an ideation contest: autonomy, variety, tacitness and complexity. Freedom to solve the contest demands increases the sense of autonomy, which in turn increases the meaningfulness of the task (Zheng et al. 2011, 80). This is in line with multiple research. For example, Arad et al. (1997, 47) found autonomy on own tasks being the most essential factor affecting creativity. Variety maintains an interest in the contest and allows participants to use their full potential, which increases motivation to participate. Contest tacitness means that the problem to be solved is not clearly defined, which may cause misunderstandings and uncertainty and that way negatively affect willingness to participate. (Zheng et al. 2011, 80.) Demanding tasks, which require applying a variety of different skills, are considered more meaningful than easy tasks (Zheng et al. 2011, 63). However, excessive contest complexity reduces the enthusiasm to participate in the contest when it is felt too demanding to gather and apply the knowledge required to participate (Zheng et al. 2011, 81).

Zheng et al. (2011, 79) found gaining recognition an important motivation factor, whereas gaining monetary reward did not play that important role in the decision to participate in an ideation contest. Timely feedback, interaction possibility in the contest platform and sharing reputation were proposed as ways of increasing extrinsic motivation to participate. Receiving feedback signals that the person's input has been noted (Cabrera & Cabrera 2002, 699). Feedback is better to give within a short period of time, and it is not significant whether the feedback is given by the manager, colleague or even by customer (de Jong & Den Hartog 2007, 54). Interaction between contest organizer and participants and among the participants creates trust, which is essential in knowledge sharing (Bartol & Srivastava. 2002, 73; Zheng et al. 2011, 80).

Kosonen et al. (2014) have found a correlation between feedback from the organizer as well as interaction and participants' willingness to share knowledge in crowdsourcing. However, comprehensive feedback with a short response time would require the organizer to assign adequate resources for interaction with participants. Therefore, a more interactive platform is

recommended in crowdsourcing than ones with just “like”-buttons or comment fields. More developed messaging systems, discussion forums and combining people with similar kinds of ideas together to develop them further would improve the quality of presented ideas. Competitive elements in crowdsourcing, in turn, are considered to increase the quantity of shared ideas. Publishing news about idea sharing on the company intranet or sending notifications from the idea management tool remind of being a member of the community, which increases willingness to participate (Cabrera & Cabrera 2002, 703).

Motive-Incentive-Activation-Behavior Model shown in Figure 2 visualizes how the influence of suitable incentives, which can be an intrinsic desire or extrinsic stimuli, activates the corresponding motive and leads to certain behavior. Typically, in crowdsourcing contests, the organizer has no influence on intrinsic incentives and need to focus on establishing suitable extrinsic incentives. (Leimeister et al. 2009, 203.) In company internal ideation contests, the employer can have some influence on employees' job satisfaction and sense of competence, which provides a better opportunity to activate employees to behave as desired.

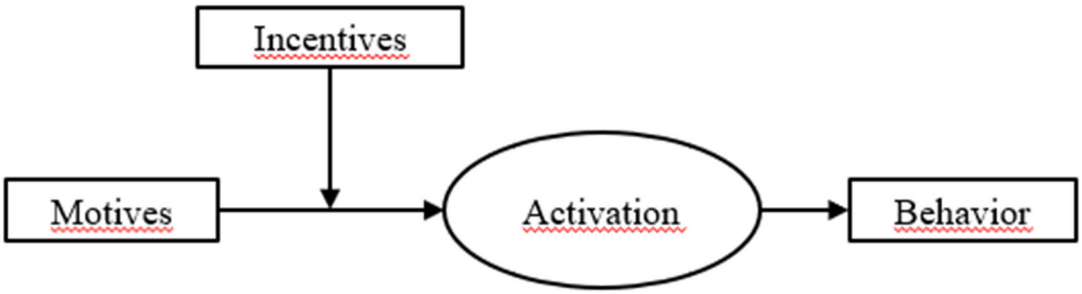

Figure 2 Motive-Incentive-Activation-Behavior Model (von Rosenstiel 2007 cited in Leimeister et al. 2009, 203)

4 METHODOLOGY

Research methodology gives guidelines to perform a study. The result may differ depending on the choices made regarding research methodology. Different choices in methodology selection do not make the study better or worse. (Hirsjärvi, Remes & Sajavaara 2007, 119.) However, it is important to make conscious selections based on justified reasons; otherwise, the result will be a sum of coincidences that may not serve the purpose it was meant to. Selecting a suitable research strategy and research methods is an essential phase of the research and require to be planned carefully. Proper research material is a prerequisite for a good research. In addition, the material has to be interpreted correctly to get valuable information out of it. Material gathering and research method selection are closely related, so those need to be considered simultaneously. (Hakala 2018, 14.)

4.1 Research strategy

A case study is used as a research strategy for this cross-sectional study. Case study material is typically detailed, focusing on a single case or multiple cases. The case can be an occasion or situation in which individuals, groups or communities are studied in relation to their surroundings. Usually, more than one data collection method is used. (Hirsjärvi et al. 2007, 130-131.) Descriptions, explanations and pursuit of understanding are essential in a case study. The case is always actual and appears naturally in an operational environment. (Vilkka, Saarela & Eskola 2018, 192.) The aim of the case study is to define the case, analyze it and provide a solution (Eriksson & Koistinen 2014, 4). In the case study, it is essential that the case can be clearly defined and delimited (Eriksson & Koistinen 2014, 6).

A case study is a suitable research strategy when the research question is “how” or “why”, the researcher does not have control over behavioral events, and the research focuses on contemporary events (Yin 2018, 9). “How” and “why” -questions are explanatory, allowing to delve deeper into operational processes over time instead of focusing only on the incidence of an occasion (Yin 2018, 10). Contemporality does not mean only present but also includes recent past, and it allows to use interviews of involved people and observation of events as data gathering method (Yin 2018, 12). Direct, precise or systematic manipulation to control

behavioral events is not required in the case study (Yin 2018, 12). In this study explanatory approach has been used. An explanatory case study aims to explain why the case is like it is or how it has developed in a certain way. The research focus is on relations between complex real-life events supported by theory background. (Eriksson & Koistinen 2014, 13.)

Yin (2018, 49-51) introduces five rationales to use single-case design instead of multiple-case design.

1. *Critical case* is used to test if the proposed theory is true or if there are alternative explanations to challenge the prevailing theory.
2. *Unusual case* refers to the extreme occasion which findings may be generalizable to several usual occasions.
3. *Common case* deals with everyday situations reflected on theory providing important information to understand and effect on common occasions.
4. *Revelatory case* refers to a case that has not been possible to study previously, for example, due to its sensitivity or inaccessibility.
5. In *longitudinal case,* the change over time is examined.

In this study common case is applied as it suits the purpose and enables achieving valuable outcome without extensive resources.

Essential steps and related risks in a case study are presented in Table 1. Steps can be taken in a different order and repeated several times, which makes a case study an iterative process (Eriksson & Koistinen 2014, 22). These steps have been followed in this study, and most of them have been returned to during the study. There are also other common risks that may be realized in any research, but the ones shown in Table 1 need special attention, particularly in the case study. Risks can be mitigated by comprehensive familiarization with the topic based on theory and previous research, bearing the research question and research objectives in mind, making a clear plan and keeping it up to date in case there are changes and having an objective perspective towards the study. Related risks emphasize the importance of careful planning of the design, continuous discussion between previous knowledge of the topic and studied case, and proper analysis of the results. Finally, it is important to make the report interesting to read.

Table 1 Essential case study steps and related risks (Eriksson & Koistinen 2014, 22, 47-48)

CASE STUDY STEPS	RISKS RELATED TO STEP
Formulating research question	Unclear or too general research question does not bring any novelty value
Structuring research design	
Defining and selecting the case	Unclear case definition in reporting phase or changes in case definition during the study confuses what is actually the case
Defining theoretical viewpoints and concepts	Lack of theoretical terms and knowledge makes it difficult to find relationship between theoretical framework and new information that case study provides
	Weak linkages to previous research makes it difficult to know what has been researched earlier about the topic
Negotiation between research material and research questions	Lack of discussion makes it difficult to undesrtand what are the conclusions and what is new compared to previoius research
Defining analysis methods and interpretation rules	Inadequate analysis of research data makes it difficult to understand what results mean and how conclusions are drawn
Deciding reporting method	Nondescript reporting kills the interest to read the research

The case in this study is the case company's idea management tool users and their experiences of the tool and ideation challenges during a certain period. This study represents an intensive case study, which means that it focuses on an actual unique case, and the target is to understand the case better and examine it from different perspectives. The study delivers value as itself. In comparison, an extensive case study would be used if the target was to make generalizations, test existing theories or create new theories based on a case. (Eriksson & Koistinen 2014, 18-20.) The case was selected based on the need of the company to gather opinions about the idea management tool and ideation contests.

4.2 Research methods

Both qualitative and quantitative research methods are used in this study, with the qualitative method being dominant. Using a multimethod approach helps to fill the gaps that may be left if only one method was used (Kitchenham 2010, 562). The purpose of the quantitative part of the study is to get measurable data of user experiences, whereas the qualitative part gives more depth insight into user experiences and development ideas. The typical characteristic for qualitative research is holistic information acquisition in natural, real-life environment. Information gathering is often carried out by a human to enable making valuable observations. Research data is examined in detail from various perspectives, and research methods, such as thematic interviews and participatory observation, allow participants to share their opinions more freely than just by selecting from given options. The survey population is selected appropriately to get relevant results, and collected data is treated as unique. (Hirsjärvi et al. 2007, 160.) Typical quantitative research characteristics in this study are that concepts are defined, and survey results can be processed numerically and statistically. Also, target group is clearly defined. (Hirsjärvi et al. 2007, 136.)

The interview is one of the main research methods in qualitative research. Interview emphasizes interviewees' role as a subject and highlights interest towards interviewees' insights also in a broader view. By using interview, it is possible to clarify the answers and deepen the reasons behind them. It is important to make the interview situation comfortable and trustful and underline the meaning of honest opinions without personal criticism. (Hirsjärvi et al. 2007, 200-201.) Weaknesses in using the interview as a data collection method are faulty answers either purposely or by mistake due to misunderstanding of poorly articulated questions, inaccuracies due to respondent's poor recall or tendency to answer as expected (Yin 2018, 114).

Interviews are often divided into three groups: structured, semi-structured and unstructured interviews. In a structured interview, same questions are asked in the same order from each interviewee. In a semi-structured interview, same questions are prepared for all interviewees, but depending on interview progress, the order can be different, and there may be additional clarifying questions. The semi-structured interview is also called a thematic interview because the theme is defined, but the exact form of questions may vary. An unstructured interview is

close to a discussion, which shapes itself during the interview, and even the subject may change. An unstructured interview is also called an open interview. (Hirsjärvi et al. 2007, 203-204.) A semi-structured interview fits the purpose of this study as there is no matter in which order questions are asked, but all pre-defined questions need to be answered. A semi-structured interview allows one to talk about the subjects fluently in the order they come to mind so that any opinion will not be forgotten because it is not actually responding to the question under discussion at that moment (Eskola, Lätti & Vastamäki 2018, 29-30).

By combining qualitative and quantitative methods, information can be gathered from a target group by structured survey and from selected users by semi-structured interviews (Hirsjärvi et al. 2007, 130). Advantages of the survey are that it is possible to reach a large number of people and ask several questions effectively and cost-efficiently. Structured questions can be summarized and analyzed easily, and the survey schedule can be planned well in advance. Disadvantages of the survey are that it is not possible to know have respondents understood questions as intended, are they sufficiently aware of question topics and are they answering honestly and carefully. (Hirsjärvi et al. 2007, 190.) Closed-ended questions enable the respondent to recognize a specific topic without the need to remember it by heart. Responses are comparable, uniform and easy to process with the computer. Open-ended questions allow respondents to share their thoughts in their own words indicating what is important so that it is memorable, give answers outside given options that the questioner might not even have thought about and explain the reason for response in more detail. (Hirsjärvi et al. 2007, 196.) The risk with open-ended questions is that the answer may be unclear or irrelevant. Open-ended questions are easily left unanswered, and analyzing the answers is time-consuming. (Valli 2018, 114.)

4.3 Ideation challenges in case company

Case company uses the online idea management tool provided by 3rd party to organize ideation challenges for employees and manages the use of the tool and ideation challenges by itself with technical support from the platform provider when needed. The tool is tailored to suit the case company's requirements, and modifications to it can be done upon request. In the past, a similar tool has been used among R&D personnel. Bullinger-Hoffman and Möslein (2010) have

identified ten key design elements for innovation contests. These are presented in Table 2. The elements that are relevant to the case company are framed.

Table 2 Key design elements for innovation contests. Elements relevant to the case company are framed (Bullinger-Hoffman & Möslein 2010, 3).

Design element *(synonyms)*: definition	**Attributes**					
1 Media (-): environment of IC	Online		Mixed		Offline	
2 Organizer (-): entity initiating IC	Company	Public organization	Non-profit		Individual	
3 Task/ Topic specificity *(problem specification)*: solution space of IC	Low (Open Task)		Defined		High (Specific task)	
4 Degree of elaboration *(elaborateness, eligibility, degree of idea elaboration)*: required level of detail for submission to IC	Idea	Sketch	Concept	Proto-type	Solution	Evolving
5 Target group *(target audience, target participants, composition of group)*: description of participants of IC	Specified			Unspecified		
6 Participation as *(eligibility)*: number of persons forming one entity of participant	Individual		Team		Both	
7 Contest period *(timeline)*: runtime of IC	Very short term	Short term	Long term		Very long term	
8 Reward/ motivation (-): incentives used to encourage participation	Monetary		Non-monetary		Mixed	
9 Community functionality *(community application, communication possibility, tools)*: functionalities for interaction within participants	Given			Not given		
10 Evaluation *(ranking)*: method to determine ranking of submissions to IC	Jury evaluation	Peer review	Self assessment		Mixed	

In the case company, innovation contests are arranged by the company, and the target group is specified consisting of all the company employees. The employees can participate individually or as a group. Innovation contests are arranged online with a web-based tool. Evaluation and ranking are also carried out using online tools. The minimum input requirement to participate is idea description and need for the outcome. Often ideas have been evolved further, and there are sketches or drawings attached for clarification. It is also possible to link the idea to other relative ideas. The intention is not to seek a solution to any particular problem, but the contest theme is defined within which individual ideas may vary a lot.

In innovation contests participation period is limited, and contests have been divided into four categories depending on time span: very short term contest participation period is up to 14 days, short term from 15 days to six weeks, long term from six weeks to four months and very long

term more than four months. The contest participation period in the case company is four weeks, so it belongs to short term contest category. Idea management tool users are able to view, comment, like and follow each other's ideas. All posts in the tool are published immediately for other users to see. The jury makes the decision on which ideas are handed over to the R&D department for further development, and idea submitters are rewarded with monetary reward: the first one is getting the greatest and the third one getting the smallest reward. Other semi-finalists receive gift vouchers. Especially in the first challenge, the prizes were remarkable. In the second challenge, prizes were smaller but notable. All three winner's names and ideas are published on company intranet pages bringing appreciation and positive publicity.

Case company's ideation challenges follow mainly steps of the seven-step process, which is introduced by Campos-Blázquez et al. (2020, 25-27). The purpose of the model is to align strategic challenges with innovation. Model is presented in Figure 3 with step durations in the case company, added for reference. Steps are described below, and the case company's operation and deviations to the model are elaborated.

1. In the planning phase, contest objectives are set, and the challenge is formulated with the challenge owner. Participant group, participation period and evaluation criteria are defined, the jury is established, and a reward system is determined.

2. Purpose of the promotion phase is to make employees aware of the coming challenge and getting inspired by spreading the word through different channels.
    - In the case company, news on company intranet pages, enterprise social networking service Yammer and introduction and training videos were used. Promotion e-mails were sent to relevant directors with the request to share the information in their departments.

3. According to the seven-step process, the employees are invited to participate by e-mail on the launch day.
    - In the case company, the invitation was done with an announcement on the intranet's global main page according to communication department instruction.

4. In the participation phase, objective is to collect as many ideas as possible. Participants are encouraged to share their ideas, which has to be made easy to perform in practice. Minimum input includes participant name and title, idea description, need for a solution and expected results of its implementation.
    - In the case company, expected result was not required as input.

5. In the evaluation phase, ideas may be voted by other participants, but the pre-established jury makes the final evaluation based on evaluation criteria and decides which ideas will get ahead to the next phase. Common criteria are novelty, appeal and feasibility.
    - In the case company, these criteria appear rephrased and are presented more specifically in the next section.

6. In the selection phase, the jury submits a shortlist of top ideas to the steering committee, which selects the winners.

7. In the last phase, winning ideas are developed, and authors of ideas may participate in development and implementation.
    - In the case company, the best ideas are submitted to the R&D department, which will process them further. The author of the idea is not automatically invited to participate in the development phase. In addition to winning ideas, the best around 50 ideas have been categorized and submitted to the relevant R&D department team managers based on the idea category.

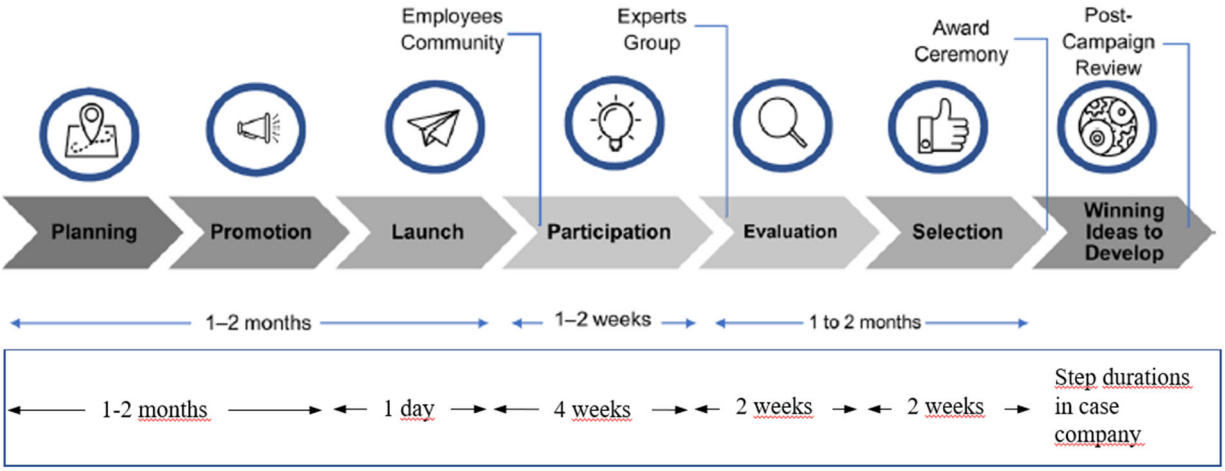

Figure 3 The seven-step innovation process (Campos-Blázquez et al. 2020, 26) with step durations in the case company added below

Rewarding is not mentioned as a process step or action, but its importance is acknowledged, and it takes place at the end of the winner selection phase. It is also essential to have a post-campaign session with the contest organizer team after the contest to review learnings and best practices. (Campos-Blázquez et al. 2020, 25-27.)

4.4 Idea evaluation process in the case company

The jury is selected case by case to represent the most relevant expertise for each theme, so the composition of the jury was partly different in the first and the second challenge. In both challenges, the jury consisted of eight members from different functions of the company. Part of jury members were senior managers with the objective of providing top management support for developing challenge ideas further. The chief executive officer (CEO) of the company was included in the winner selection in the first challenge indicating the importance of the subject. Before presenting ideas to the jury, a group of evaluators shortlisted the ideas. An evaluation system with granularity in rating scale and several criteria to be rated for one idea was used in both challenges. This kind of complex evaluation system has been found to give more accurate results than dichotomous or simple one-dimensional rating (Riedl, Blohm, Leimeister & Krcmar 2010, 14-15).

Health and well-being challenge

The evaluator group consisted of five innovation champions from the R&D department representing five geographical areas. Ideas were sorted by area depending on where the idea submitter is located, and each innovation champion evaluated their own area's ideas by giving a score from one to five for each criterion depending on how well the idea met the criterion. The total score was received by summing up scores for each criterion. The better the idea met the criteria, the higher score it got. Some innovation champions had a team to work on the evaluation, while others made the evaluation by themselves. First evaluations were done in the idea management tool, but evaluators felt that very complicated, so the rest of the ideas were evaluated by using Microsoft Excel tool with the same approach. The top ten ideas from each area were submitted to the jury, which selected the final top ten ideas and, further, the top five ideas. The patent department representative was on the jury evaluating idea patentability. From the top five ideas, the executive board selected the winner, the second and the third best ideas based on pitching presentations given by the idea submitters. Jury members coached the idea submitters for the pitching so that the outlook was uniform and all relevant details were presented.

Evaluation criteria in the health and well-being challenge were

1. Fit in with the company offering from a commercial and technical perspective
2. Address customer or end-user pain points
3. Be possible to implement in the next 18 months
4. Differentiate company from the competition
5. Be patentable (something new, inventive, or technical)

Digital experience challenge

In the second challenge evaluation system was changed a bit to make it simpler. The evaluator group consisted of six innovation champions from the R&D department. Evaluators for each idea were randomly selected among the innovation champions so that each idea was evaluated by two different evaluators. In the first evaluation round, they independently gave a score from one to five for each criterion depending on how well the idea met the criterion. The total score

was received by summing up three criteria scores from two evaluators, the minimum score being six and maximum 30. The evaluation table is demonstrated in Table 3.

Table 3 Idea evaluation table in digital experience challenge

	1st Evaluator	Score for criterion 1	Score for criterion 2	Score for criterion 3	2nd Evaluator	Score for criterion 1	Score for criterion 2	Score for criterion 3	Total score
Idea 1	Evaluator 1	1 to 5	1 to 5	1 to 5	Evaluator 4	1 to 5	1 to 5	1 to 5	score 6-30
Idea 2	Evaluator 6	1 to 5	1 to 5	1 to 5	Evaluator 5	1 to 5	1 to 5	1 to 5	score 6-30
Idea 3	Evaluator 3	1 to 5	1 to 5	1 to 5	Evaluator 1	1 to 5	1 to 5	1 to 5	score 6-30

The better the idea met the criteria, the higher score it got. 42 ideas reached a higher score than 19 and 63 ideas higher than 18, so the top 42 ideas were selected to the second round to limit the number of ideas to be processed further. After that, the patent department made a patentability assessment for shortlisted ideas. Innovation champions selected the top ten ideas together with the jury. The jury selected the top five ideas and invited idea submitters to pitch their own idea in a few minutes video clip. Finally, the jury announced the top three ideas to be implemented, and top management rewarded idea submitters.

Evaluation criteria in digital experience challenge were

1. Innovativeness in demonstrating there are no limits to selected product connectivity
2. Idea has relevance to the selected product from company selection
3. Idea differentiates the company from the competition

4.5 User experience survey description

Two user experience surveys were made to gather primary source information for the study. The first survey was done in September, three months after the first challenge participation phase was closed, and the second survey was done in November, two months after the second challenge participation phase was closed. The target group for both surveys was all employees who had signed in the idea management tool since 28th of February 2020, so the target group of the second survey included also target group of the first survey. The intention was to gather plenty of user experiences as the tool and the company-wide contest approach are new in the company and there is no such experience-based information available yet. Invitation to the first survey was sent to 1253 persons and invitation to second survey to 2785 persons. The questionnaire was kept compact, simple and quick to respond so that complicity or length would not inhibit answering. The same questions were asked in both questionnaires. There was no reward for respondents to the first survey, but among the respondents to the second survey, three gift cards were drawn.

The user experience survey consisted of ten questions on three topics:

1. Ideation challenges organized via idea management tool (questions 1-3)
2. Idea handling process (questions 4-5)
3. Idea management tool user interface (questions 6-9)

Free comments regarding the above three topics and development proposals were asked at the end of the survey (question 10).

Semantic differential with the five-point rating scale was used to measure opinions in questions 1, 2, 3, 4, 6 and 7. The positive extreme was on the far right, and the negative extreme on the far left. The middle option represented the neutral opinion. Values higher than that were considered positive, and values lower than that were considered negative. According to Valli (2018, 112), the phrasing of questions can be purposely mixed vice versa as people tend to adjust their selection towards more positive answers after few questions. However, inconsistency might cause confusion and lead to errors in answers if questions are not carefully read. Considering shortness of the questionnaire, a logical approach was respected. Questions 5 and 9 were multiple choice questions, with question 9 also having a free text field. Question

8 was a dichotomous question, and question 10 was an open-ended question. The questionnaire was compiled with the Microsoft Forms tool, which is convenient to use also with a mobile device. The questionnaire was tested by two other persons before sending it to the whole target group. The link to the questionnaire was sent by e-mail as all target group members are presumed to read their e-mail on a daily or at least weekly basis, and the questionnaire can be sent to a large amount of people at once. Only one response per respondent was registered. The response period was set to two weeks to get answers soon but adaptable to respondents' schedules without a rush.

Responses were summarized with Microsoft Forms and Microsoft Excel tools. For rating scale questions, Microsoft Forms calculated average rating values automatically, as well as the share of both options in dichotomous question and distribution of answers in multiple choice questions. For more detailed analysis, the data was exported to Microsoft Excel. Open-ended questions' responses were converted to Microsoft Excel format for analysis. Free comments were categorized by theme and further by a more detailed subject. Categorizing was done based on repeating themes in responses, which helped in sharing the findings with relevant stakeholders. A more detailed breakdown helped to find root causes for given feedback and improvement proposals for individual matters.

4.6 User interview description

Based on activity in idea management tool usage, some users were invited for an interview to elaborate their thoughts on idea sharing, idea management tool and ideation challenges. Interviews were conducted after the first survey. The target was to interview 5-10 active users. The focus was put on active users as a sample to ensure that interviewees have actually used the tool in practice, and they might have more opinions to share than occasional users. User activity was determined by the user data from the tool: the number of ideas the user has entered and the number of ideas the user has commented or liked. The aim was to get a comprehensive overview, so the user's location and department were considered in the selection so that selected interviewees represented different geographical and cultural views and different functions.

Interview invitation was sent to 12 selected employees. Seven of them accepted the invitation. Five users were interviewed by audio call, and two sent responses by e-mail due to poor audio quality in the call. Interviews took 25-45 minutes, depending on the respondent. The selected interviewees represented engineering in customer interface in Europe, R&D engineering in Asia, customized engineering in Asia, project management in North America, R&D innovation research in Asia, sales in Europe and R&D technology category management in Asia. Questions were sent to interviewees in advance so that they got an idea of subjects to be discussed and had time to prepare themselves.

Interviews were conversational, and the order of questions varied depending on the course of conversation. Notes were taken during interviews and summarized afterward. Interviews started with a short introduction to why the interview is being done and why the interviewee has been invited to participate. Small talk and easy questions, in the beginning, were used to calm the situation and to orientate on the topic. (Eskola et al. 2018, 36-37.) Usually, interviewees also told briefly about their background and current role in the organization. The interview consisted of below nine questions.

1. What is currently the most useful way for you to share ideas in your work?
2. How should we collect ideas as a company in order to get more differentiation to our products and services?
3. How to provide added value for different stakeholders with idea management tool (customers, end users, suppliers, external networks)?
4. Getting feedback from the idea management tool: Importance of having a dedicated person giving feedback locally / chatbot giving automatic feedback?
5. How do you feel about the idea evaluation and approval process used in the global ideation challenges and how would you improve it?
6. In your view, how should the challenges in idea management tool be arranged? For example: local challenge in your own unit or companywide challenge?
7. Feedback on idea management tool/process in general, what's good / what's been missing and what needs improvement? (e.g. visual outlook, usability, training materials, languages, interactivity, features…)?

8. Improvement ideas for idea management tool layout to get more people involved with the tool (own channels for different topics, own site for Front line, own site for different expertise e.g. software developers?)
9. How to raise interest towards idea management tool? For example, by gamification?

4.7 Research quality

Research can be assessed based on its reliability and validity. Research validity represents its capability to study what has been meant to study. Research reliability means that the same results and conclusions will be received when the study is repeated. (Hirsjärvi et al. 2007, 226.) Research can be reliable even if it is not valid, but to be valid, it has to be reliable (Ward & Street 2010, 800).

Validity

Case study validity can be assessed by three tests: construct validity, internal validity and external validity.

- Construct validity refers to the accuracy of the methods to measure the research object. Often case studies are subject to interpretation when topics are not concrete and easily measurable. This can be diminished by defining the research object unambiguously and setting operational measures for it. Using multiple sources of evidence and asking key informants to review the draft versions of the results mitigates the risk of the researcher's biases affecting the outcome. (Yin 2018, 42-44.)
- Internal validity refers to causal relationships between events. When a researcher is unable to make direct observations to reveal causal relationships, conclusions are based on inferences. Few technics can be used to avoid misinterpretations, such as pattern matching, explanation building, addressing rival explanations and using logic models. (Yin 2018, 42-45.)
- External validity refers to generalizability of results: whether the conclusions of the research can be applied to other contexts, populations or theory. External validity is used more in the quantitative type of case studies in which representative sampling is essential to generalize the findings to the whole population or to another similar type of

case. However, in many case studies, sampling is very limited due to context, time, or population, and the main focus is on making a deep analysis of the particular case. (Yue 2010, 962.)

Reliability

In qualitative analysis, categorizing has an essential role, so reasons for category selection and sorting need to be revealed. (Hirsjärvi et al. 2007, 226.) Case studies seldom can be repeated as such, but to have the possibility to do so, the research has to be explicitly documented. Each procedure has to be described as exactly as possible to enable anyone to conduct it again. (Yin 2018, 46.) Research reliability epitomizes its stability and consistency. Stability refers to variance in the results if the research is conducted the same way at a later point of time, and consistency refers to variance level in the method if the research is repeated. (Ward & Street 2010, 800.) Three methods can be used to increase reliability: triangulation, interrater reliability and audit trail.

- In triangulation, several sources of material, data collection methods, researchers or theoretical frameworks or combinations of these are used to broaden the perspective and avoid biases caused by unilateral review.
- Interrater reliability methods can be used to equalize the opinions when there are many researchers doing the research. In one-researcher case studies, the researcher can try to disconnect his- / herself from the measurement process by objective approach to avoid biases that may have an effect on the results.
- Proper documentation generates an audit trail, which enables performing the research the same way again. (Ward & Street 2010, 801-802.)

5 RESULTS

In the health and well-being themed ideation challenge, there were given 515 ideas and in the digital experience themed challenge, there were given 303 ideas within the given timeframe. The majority of participants entered one idea in the idea management tool in both challenges, while the most active idea provider gave more than 30 ideas in one challenge. In the health and well-being themed challenge, 27 ideas were commented on, and 94 ideas were liked in the idea management tool. In the digital experience themed challenge, 22 ideas were commented on, and 82 ideas were liked.

5.1 Survey results

87 of 1253 invited idea management tool users answered the first user experience survey, and 272 of 2785 users answered the second user experience survey resulting in response rates of 7% and 10%. The possibility to win a gift card in the second survey may have increased the responsiveness. It was allowed to leave any questions unanswered in both surveys. 95% of the first survey respondents and 97% of the second survey respondents answered all questions except open comments, in which response rates were 29% in the first survey and 24% in the second survey.

The first three questions were about the latest ideation challenge. Questions with average ratings are shown in Figure 4. Rating scale is 1 = “not useful at all” and 5 = “very useful”. All three questions got a score higher than 4 in both surveys, and each question got a higher score in the second survey than in the first survey. The reason for this might be that during the second challenge, some users have already experienced the first ideation challenge and may therefore feel the challenge format familiar and clearer than during the first challenge. Question two got the highest score of all questions in the first survey, being 4,16, and question one got the highest score of all questions in the second survey, being 4,32. The share of positive opinions among the first three questions was 77-78% in the first survey and 83-85% in the second survey, which can be seen from Appendix 1.

	1st survey	2nd survey
1. Challenge was clearly defined and criteria provided good guidelines for posting idea	4,12	4,32
	★★★★☆	★★★★☆
2. Global intranet as a channel for promoting the challenge was useful	4,16	4,29
	★★★★☆	★★★★☆
3. Challenge inspired me to share my ideas.	4,14	4,29
	★★★★☆	★★★★☆

Figure 4 Results of the first three questions

The next two questions were about the ideation challenge process. Question 4 average ratings are shown in Figure 5. The rating scale is 1 = "not important at all" and 5 = "very important". Employees consider it important that there is a nominated innovation champion in their own unit, and a higher score was received in the second survey than in the first survey. The share of positive opinions was 80% in the first survey and 82% in the second survey, which can be seen from Appendix 1.

	1st survey	2nd survey
4. Importance of having a dedicated person, innovation champion, inside your unit evaluating ideas and arranging local challenges.	4,15	4,27
	★★★★☆	★★★★☆

Figure 5 Results of question 4

Question 5 results are shown in Figure 6 and Figure 7. In this question, it was possible to select several options. Results are similar in both surveys. Automatic e-mail notification was felt the best way to receive feedback from the tool after entering an idea and during the evaluation phase. Almost as good way to receive feedback was regarded comments given by e-mail from the person who evaluates the idea. Nearly all respondents would like to receive notification of received feedback after entering an idea in the tool and during the evaluation phase. If notifications or comments are given only in the idea management tool, they might be missed if the employee is not using the tool actively. In the second survey couple of respondents selected the choice "other". In elaborative comments, there were proposed monthly feedback meetings

on the proposed ideas and better transparency on received feedback for all ideas, not just feedback for user's own ideas.

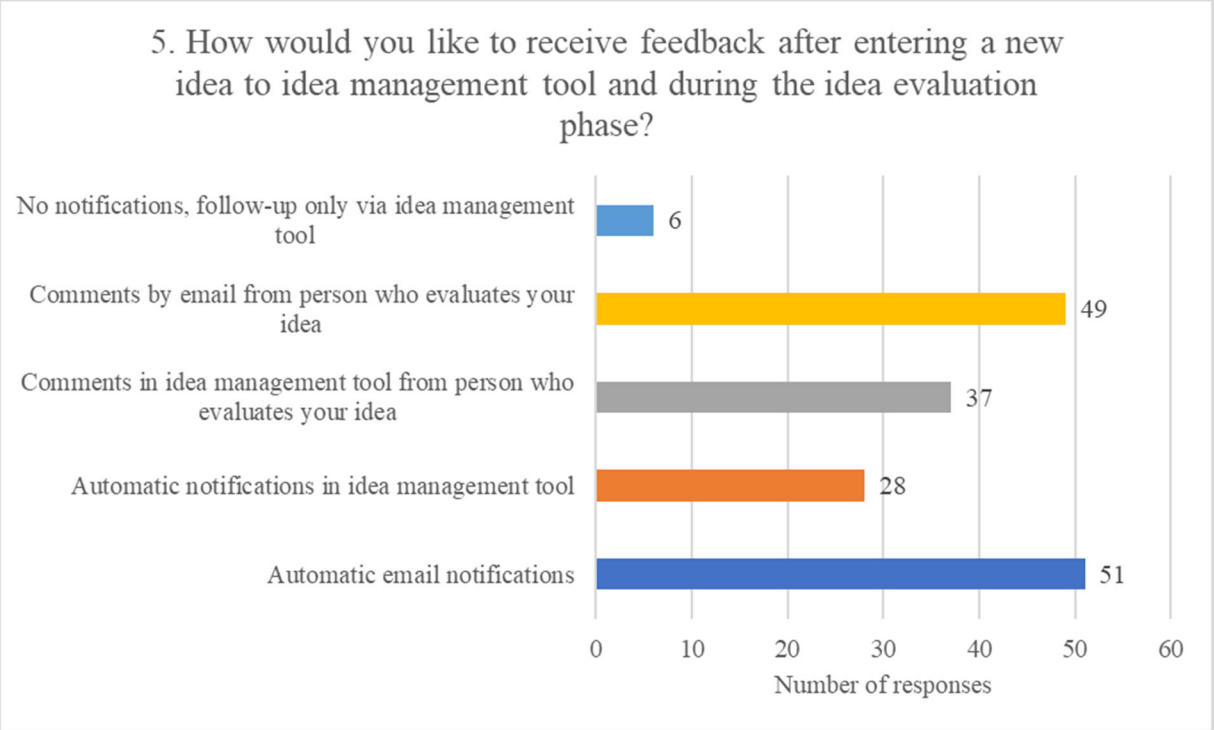

Figure 6 Results of question 5 in the first survey

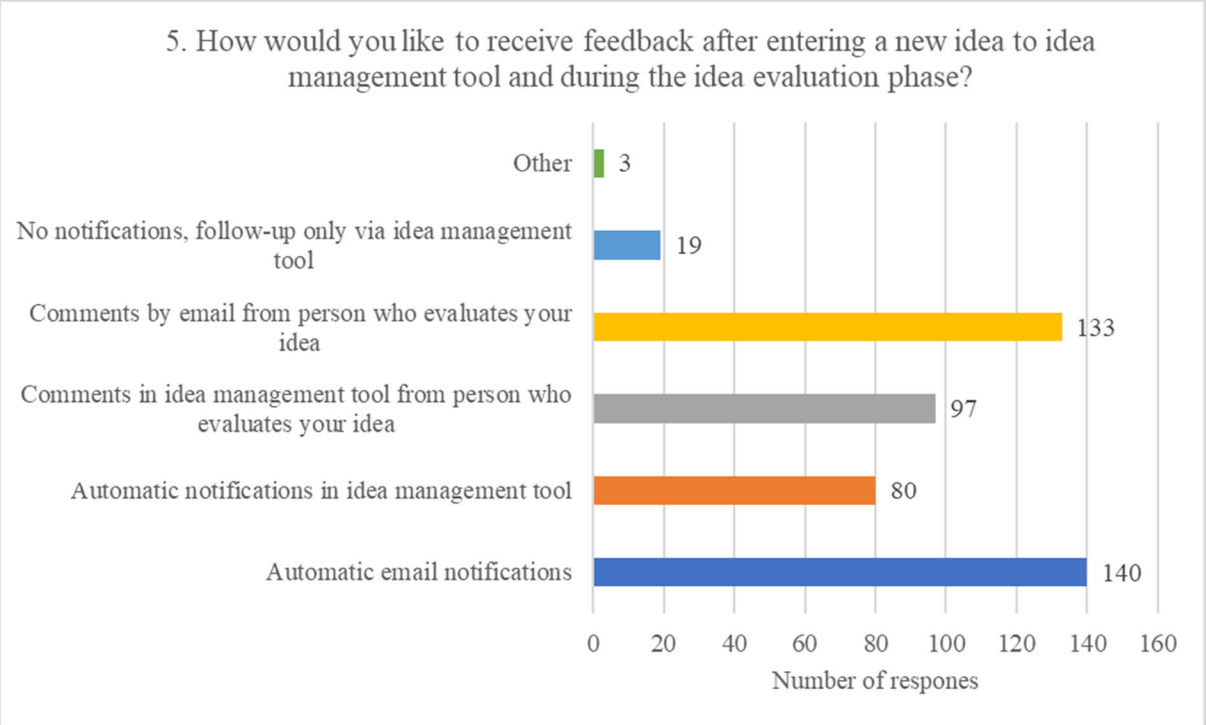

Figure 7 Results of question 5 in the second survey

Question 6-9 were about the idea management tool. Results for the question 6 and 7 are shown in Figure 8. The rating scale is 1 = “strongly disagree” and 5 = “strongly agree”. In question 6, there was mistakenly shown six stars on the rating scale in the survey form even though the scale was from one to five. Numbers one and five were shown at each end of the scale, but the number of stars may have confused the respondents and they may have given unintentionally incorrect scores. If assumed that all respondents have given the scores expecting that the maximum score is six and the average score is adjusted to scale from one to five, the average score would decrease in the first survey from 4,56 to 3,8 and in the second survey from 4,99 to 4,16. As it is not possible to know how the respondents have understood the scale, the result cannot be considered reliable. However, from the distribution of ratings shown in Appendix 1, it can be seen that the lowest scores are in the minority, which indicates that users are rather satisfied with the tool usability. The share of positive opinions was 77% in the first survey and 88% in the second survey. Idea management training videos usefulness received the lowest score among all questions in both surveys average rating being still at a good level close to four. The share of positive opinions was 70% in the first survey and 77% in the second survey, which can be seen from Appendix 1.

	1st survey	2nd survey
6. Idea management tool is easy to use (logging in, entering ideas, finding relevant information)	4,56	4,99
	★★★★½☆	★★★★★☆

	1st survey	2nd survey
7. Idea management tool training videos are useful	3,99	4,11
	★★★★☆	★★★★☆

Figure 8 Results of questions 6 and 7

In Figure 9, there is shown percentages of how many users have used the idea management tool on a mobile device. There is no mobile application for the idea management tool, but the use is possible via an internet browser on a mobile device. Most of the users have not taken this opportunity. Among the second survey respondents, there were more users who have used the tool on a mobile device. The number of smartphones and other mobile device users is increasing, which makes it natural to use mobile devices on a wide range of everyday activities (Statista 2021a; Statista 2021b). This may explain the increase in the results. Another reason might be that the second ideation challenge theme was “digital experience” which may activate employees who are aware of and interested in digital technology and are therefore keen on using mobile devices more than others.

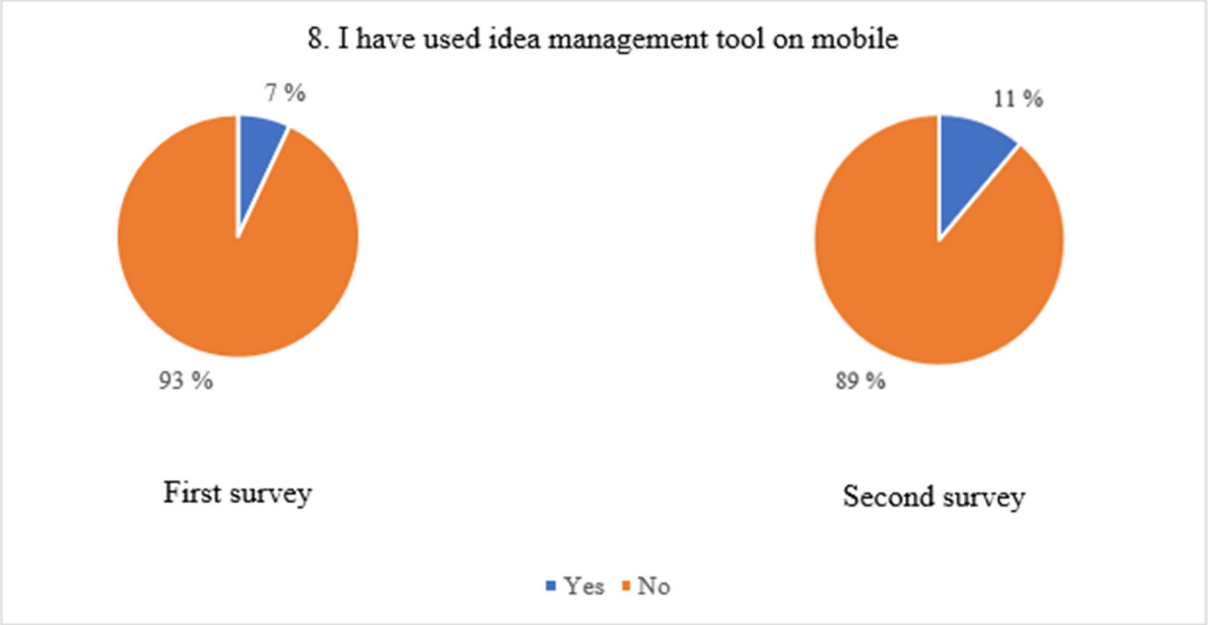

Figure 9 Results of question 8

In Figure 10 and Figure 11, there are shown the results of question 9. Knowledge sharing has been reported to be the greatest motivator to use idea management tool in daily work, according to both surveys. Next important factors were global company-wide innovation challenges, receiving feedback of own idea and monetary reward. Biggest differences between the question 9 results were the increase in the importance of tool usefulness and global company-wide challenges in the second survey compared to the first survey. For choice "other" it was possible to add clarifying comments. There was mentioned possibilities to get new career opportunities, possibility to get involved in idea implementation and receive information of implemented ideas, possibility to serve customers better and create competitive advantage for the company, getting inspired by other people and their ideas, learning from received feedback and open-minded atmosphere to share ideas. In addition, different kinds of rewards were proposed.

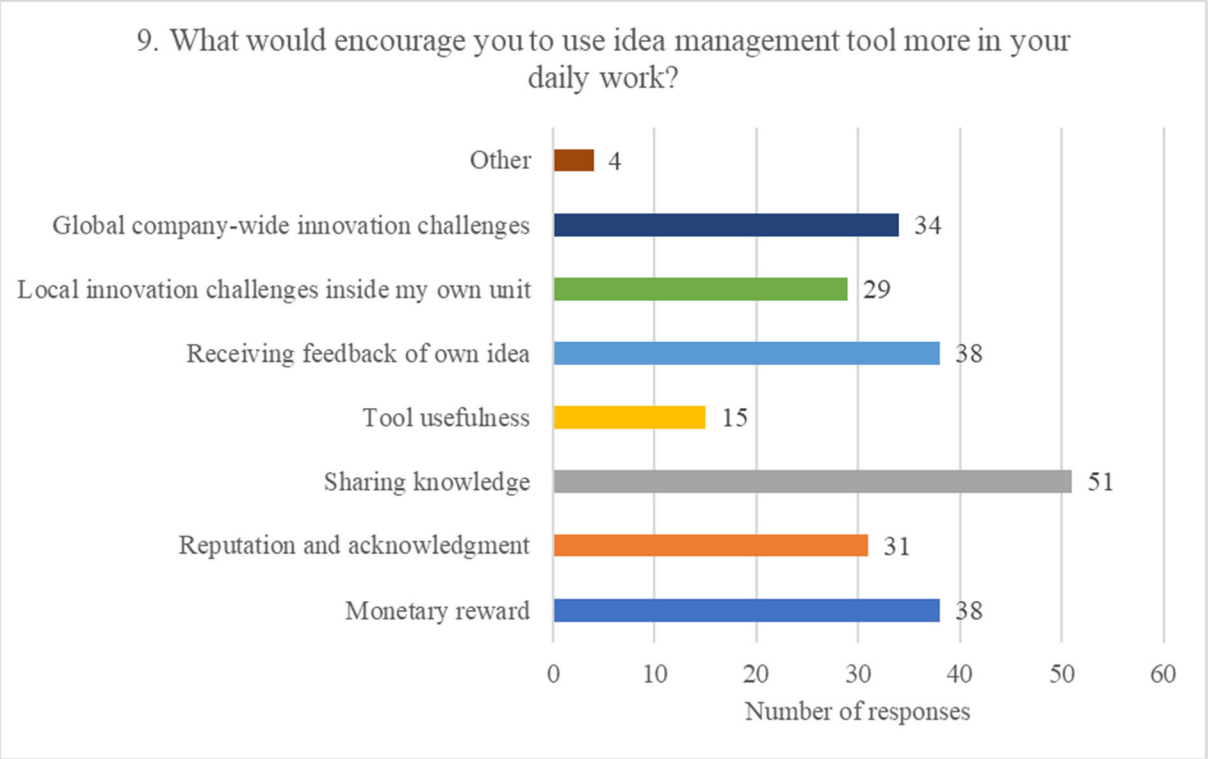

Figure 10 Results of question 9 in the first survey

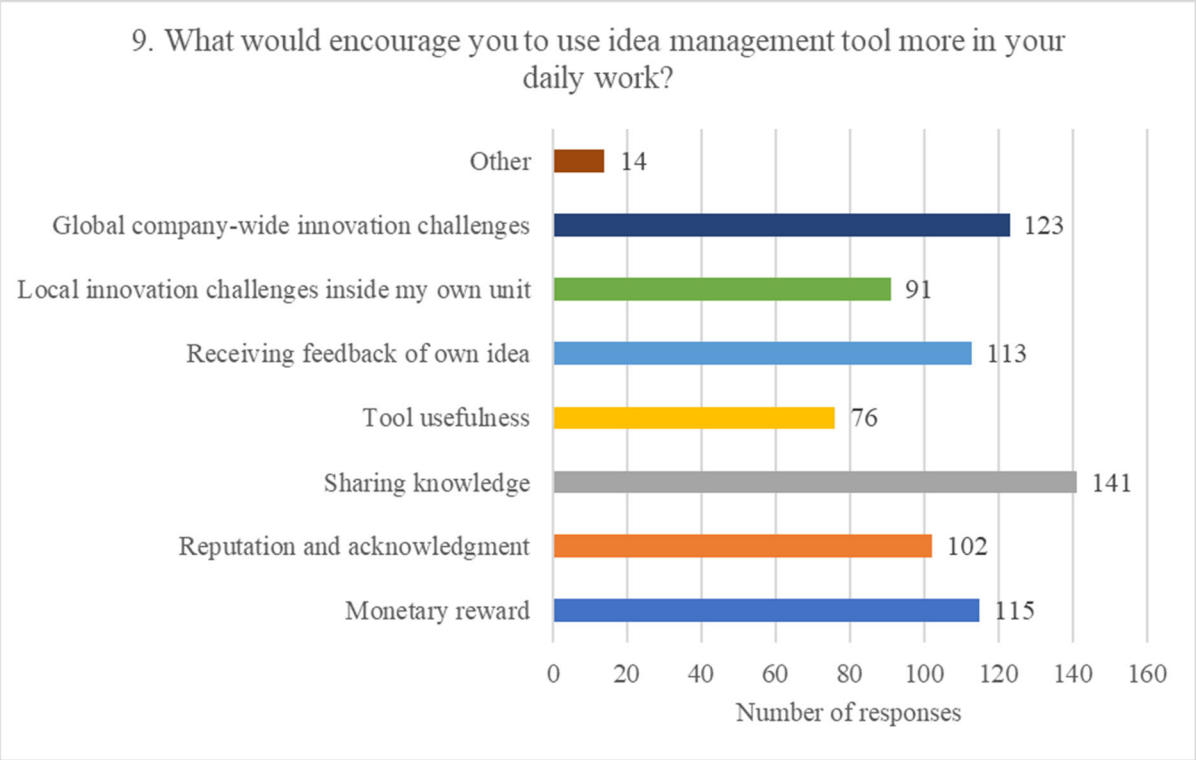

Figure 11 Results of question 9 in the second survey

In question 10, respondents were asked to give free comments regarding the idea management tool, process or latest ideation challenge. In the first survey, 25 responses were given, and in the second survey, 66 responses were given. Comments are grouped by category and presented in Figure 12 and Figure 13. Some responses included comments related to several categories. This has been considered in the grouping so that each topic is separated as its own comment according to its category. “Tool development” and “tool / process development” -categories are separated so that tool development issues can be affected by making changes only to the tool, whereas tool / process development issues would require changes both in the tool and the process.

There was variance in comment distribution between categories between the surveys. The first survey comments were grouped into five categories which all included a few comments. Most comments regarded “tool development” -category, and least comments regarded “tool / challenge promotion”. However, gaps were not big between the number of comments in each category. Second survey comments were grouped into seven categories. “Positive feedback” -category was dominant with 22 comments. “Feedback system improvement” and “tool / challenge promotion” -categories were the second-most commented with 12 comments each. Comments given in both surveys are summarized in one table and presented in Appendix 2.

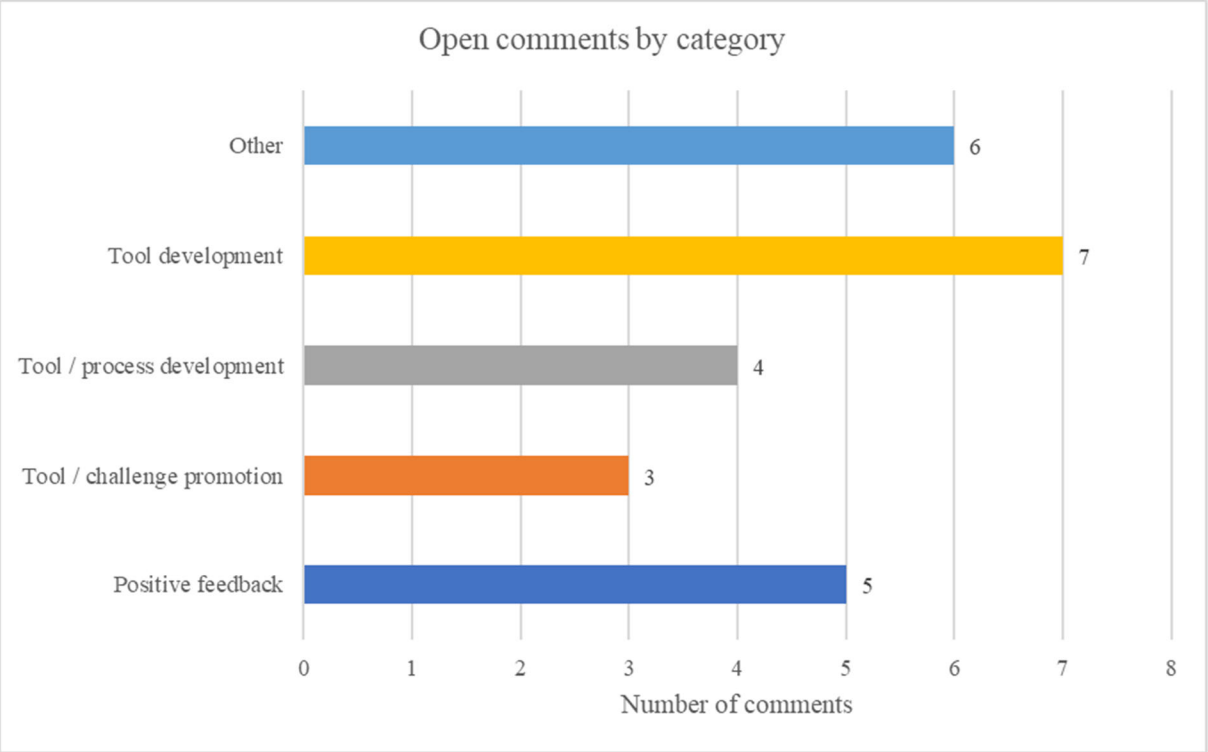

Figure 12 Open comments by category in the first survey

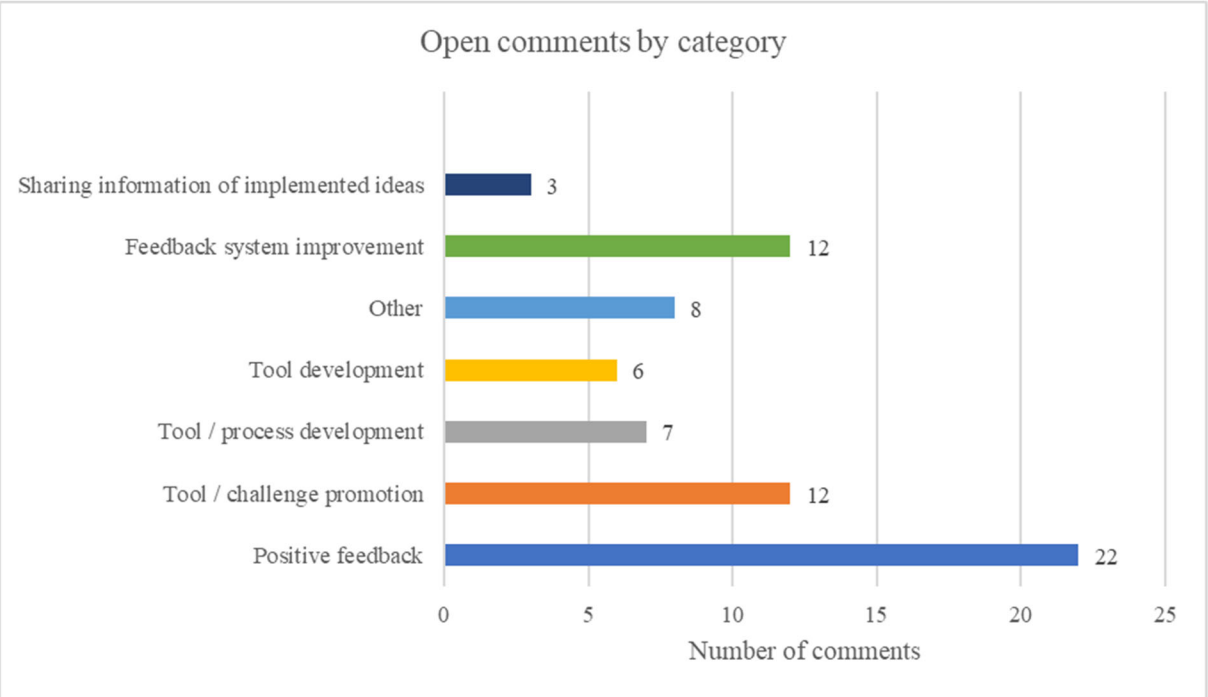

Figure 13 Open comments by category in the second survey

Both survey results were summarized and reviewed with the ideation challenge organizer team and tool developer. Improvement actions that were possible to make quickly were done instantly, and others were either added to the list of next development actions or rejected based on justified reasons.

5.2 Interview results

All seven interviewees answered the questions comprehensively and made proposals for improvement. One respondent did not have an opinion on question 7, and one did not have any specific comment on question 8. Citations in this chapter are from the interview responses.

Interviewees consider the idea management tool as a good way to share ideas currently. As other formal ways, they mentioned improvement request -process and monthly sales meetings in which there are plenty of other topics to be discussed and was therefore not considered to be the best forum to review new ideas. As less formal ways, interviewees mentioned contacting their managers to get ideas forward or discussing with colleagues because social interaction is important in idea sharing.

> *"Currently, the most efficient way for me to share ideas is face to face discussion, since the idea could be evaluated immediately during discussion. Moreover, direction of improvement can also be obtained."*

The ideas to get more differentiation to company products and services focused on utilizing existing tools better and increasing interaction and openness in the organization to get the most out of the different mindsets of the employees. Idea handling in a centralized way and having a neutral platform to share ideas were seen as an advantage of the current idea management tool. The tool just has to be promoted better and taken into use by all employees. As an improvement idea, there were proposed brainstorming sessions of top five ideas on a weekly basis, quarterly innovation contests with "Shark tank" television series style and improving understanding of customer needs.

As ways to provide added value for different stakeholders with the idea management tool, the interviewees highlighted the importance of implementing the ideas and making prototypes based on ideas. It is not enough to generate a huge number of ideas if they are never realized. Making the idea management tool more interactive and directing the focus of relevant people to relevant ideas would add value for stakeholders. This could be done by sorting the ideas in the tool, for example, by business area or by function, and forwarding them to relevant teams or persons. Some interviewees saw a correlation between better idea visualization in the tool and added value to stakeholders. They proposed a storyboard type of approach in presenting ideas in the tool and visualizing them better by using pictures and graphics to make ideas clear to understand. Added value for stakeholders was seen as a consequence of the proper use of the idea management tool.

All interviewees underlined the importance of receiving feedback from the idea management tool. Most of them preferred feedback from the dedicated person because most of the new ideas are complex and therefore not easy to handle with an automatic process. However, even a tiny automatic message would be better than not receiving feedback at all. Receiving quick feedback for ideas, also for those ones which are not so good, was believed to increase the use of the tool. Receiving feedback motivates to share more ideas; otherwise, willingness to share ideas will tail away. If there is a backlog in the idea evaluation, it would be good to receive a notification explaining it, so that the idea submitter will not get frustrated if there was no response. It would also be nice to receive an estimation on how long the idea evaluation will take after entering it into the tool.

> *"In my mind, we should do it. At least the idea generator can understand the status of his/her idea in evaluation process. Otherwise, the idea would be like stones thrown into sea."*

Interviewees understood limitations in resourcing as idea evaluation is time consuming when carried out manually by humans. Using a chatbot to some extent to eliminate human dependency was proposed by one interviewee. Receiving notification every time there is activity regarding own idea would be appreciated so that there is no need to log in to the tool just to check if there is any comment, feedback, like or evaluation given to the idea. Even if the

idea is not yet evaluated, but another user has liked it is a signal that at least someone has read it. In addition to e-mail notifications, there could be a phone call or face to face discussion about the most promising ideas.

Idea evaluation and approval process seemed to be a bit unfamiliar to interviewees, or they just had not paid attention to it, so some of the interviewees felt unable to comment on it. As improvement proposal, some of them called for more information sharing in the idea evaluation phase and more details of evaluation criteria and evaluation panel. Also, the need to increase own skills to use the tool was identified.

> *"The most recent idea challenge on health and well being is great. As for daily idea management, I need to learn more form daily experience, since the [idea management] tool is new to us."*

It was proposed that there is one global team of five to six evaluators from different fields of expertise who should rank and categorize the ideas. Most interviewees were underlining the importance of receiving feedback and notifications of idea status in the system to understand better the idea evaluation process and progress of own ideas. It was proposed that at least the most liked ideas should be commented on by the evaluator as it is understandable that all ideas cannot be commented on.

> *"Some reply mail carrying comments at least to the person (registered idea in tool) would create a great feel of recognition & impact"*

For the question about arranging ideation challenges, four interviewees preferred global challenges and three interviewees emphasized the importance of having both global and local challenges. There were many arguments that spoke for the global challenges. A team of top global experts in idea evaluation and their drive to take the ideas forward so that great ideas will not be forgotten in some dusty initiative box is highly appreciated. Global challenges will generate more diverse ideas when people from different backgrounds are providing them. Sharing knowledge more widely was seen better because ideas from one market area may be valuable also in the other market areas. Global challenges were felt to be more competitive in

a positive way. As advantages of local ideation challenges, there were mentioned the possibility to focus on local processes and smaller innovations, different market area needs and using local challenges as a way to familiarize employees with the tool in order to lower the threshold to attend global challenges. Challenge type to suit best each situation should be selected depending on organization structure and challenge specificity.

> *"We should have them both. We need global platform as base for different countries. At the same time, we also need to do modification or development based on local culture and market."*

Ease of use was mentioned as an asset of the tool, as well as the possibility to see which ideas have been implemented. Overall, having such a global platform to share ideas was praised. It enables exposure to insights of various persons across the company and gives the impression that the company is like a big family. As an improvement, there was proposed an indication if a similar idea has already been entered in the tool. This could be advanced by changing the tool structure to support the technology-segmented approach with interactive graphs, as many ideas are repetitive in nature. Feedback via tool and follow-up of idea development progress should be improved. Also, more detailed instructions for certain functions were requested. For example, what it means in practice if a user adds an idea to favorites, was not explained in the training video. Only one interviewee proposed improvement for the visual outlook of the tool.

> *"Visual outlook – could be more colorful"*

Categorization of ideas was repeated in several interviews when asked for idea management tool layout improvement ideas. Also, the filtering of ideas based on the topic was mentioned by two interviewees. Overall, making the tool more structured, for example, by creating own channels based on country, topic or department and making the interface more logical was considered beneficial. On the other hand, one idea can relate to several categories, which makes it difficult to know in which channel it should be entered. Sometimes, when trying to find a solution for a problem, the seeker may come up with the idea for another problem, so it is good to have a place to enter also random ideas. Categorization of ideas was expected to make also evaluators' work easier, and it was proposed to be done by using tags. The possibility of

integrating other tools in idea management tool was proposed as worth to be investigated. Even if the tool would be made more structured, it has to be easy to use.

Interviewees had several ideas to get more people involved with the idea management tool. Most of the interviewees mentioned rewards as a motivator, even if the reward was a small gift card. Another type of recognition was also seen as encouraging, such as a scoreboard or leaderboard with a point system, so that user can receive, for example, one point for each new idea, five points for an implemented idea and ten points for an idea selected to apply for patent. Active idea submitters could be rewarded and get appreciation from their colleagues. Active users could also be marked with an expert badge in recognition for their active contribution. Integrating the idea management tool with human resources system would show employee's initiative potential to managers and would support employee appraisal. Sharing success stories regularly would help in spreading the word of the tool and giving recognition to the idea submitter. Gamification was seen as a potential way to increase employees' interest in the idea management tool.

All in all, more promotion via different channels such as the intranet, Microsoft Teams presentations and e-mail could be utilized and arrange ideation challenges more often. The participative approach was seen as a useful method to increase the interest in the tool. Employees could be invited to join idea presentation meetings about the best ideas with an open discussion among users and evaluators. Repeating main incentives to share ideas were receiving feedback of own ideas, meaningfulness, self-development, communality, knowledge sharing, receiving recognition and rewards.

6 DISCUSSION

Based on idea management tool user experience surveys and interviews with selected users, the majority of the users are happy with the current ideation challenge concept and idea management tool. Users also highlighted some pain points and gave improvement proposals which are important pieces of information for the R&D department in developing the challenge process and the tool. As main points for improvement, there were mentioned tool development in the first survey and tool / challenge promotion and feedback system improvement in the second survey. In positive comments, users were highlighting importance and usefulness of knowledge sharing, which represents collaboration, interaction, openness and trust. These all are contributing factors to creativity and innovations. Social interaction and openness were brought up also in user interviews as ways to increase idea sharing.

6.1 Ideation challenge process

Planning

Selection of ideation challenge theme is important. Clear challenge description with precise evaluation criteria, proper communication plan and involving middle management in promoting the challenge help to make ideation challenge successful. Ideation challenge process in case company meets the four characteristics that affect the willingness to participate in ideation contest (Zheng et al. 2011, 62-66).

- Autonomy - users can decide from which perspective they approach the challenge within the given theme and in which format they provide attachments if any, only minimum input is defined.
- Variety - Themes in the first two challenge were very different, allowing employees with different knowledge and interests to participate.
- Tacitness - Based on provided ideas, most participants have understood the challenge themes correctly, and there was no feedback given in user experience surveys or interviews regarding challenge definition or rules.
- Complexity - From some of the idea descriptions, it can be seen that the proposed idea has been evolved a lot, and there has been done research on the topic.

Variety in challenges, not only in theme but also in challenge type, maintains interest and arouses excitement about upcoming challenges. In addition to company-wide challenges, there can be arranged challenges which are targeted to the specific group of employees or specific problem can be given for which new solutions are sought. In that case number of ideas would be lower but more probably hitting the target. Arranging challenge that is open only for teams instead of individuals would increase knowledge exchange and promotes cohesion and "winning together" -attitude. This way, competition and communication can be integrated beneficially. Simultaneously, when building participant teams, new users are attracted to familiarize themselves with the tool and may remain users attending also to coming challenges.

When the theme for a challenge is selected based on trends or market signal observation, it can be assumed that there is a need for new innovations in the market. Theme can also be selected based on gaps in patent coverage. If there is an identified area on products or services that company or competitors have not protected well with patents, employees can be spurred to come up with new ideas to accelerate patentable idea creation in that area. For the next challenge, one survey respondent proposed a theme related to company culture or mindset. This would not require any technical knowledge and would be an easy way to start using the tool. It would also make employees think about their working environment and what the company means for them. These aspects speak for versatile possibilities of ideation challenges.

Promotion

Many users may have just signed in to see what it is about but have not actually used the tool. This can be deduced from the questions received after the links to questionnaires were sent. Some employees asked if the questionnaire was sent to the correct person or said that they have heard about the idea management tool but had not really used it. On the other hand, the survey works as a promotion method so that employees recall the tool’s existence and get interested in it. This was utilized in the first survey invitation e-mail by embedding a link to the tool and to the next challenge, which was starting soon after the first survey.

Survey respondents and interviewed users recommended promoting the idea management tool and challenges more. This indicates that they have found it useful and would like that more people will get to know about it. Challenge advertisement in intranet has been accessible for everyone but may have been missed. A more personal way of communication may be noticed better and cause more action. However, many employees get plenty of e-mails and notifications from several channels, causing irritation, and a key point may be missed in the notification flood. Therefore company-wide informing has to be considered carefully.

Great experiences of current users encourage them to participate again and spread the word among colleagues. News on the intranet and posts in Yammer about implemented ideas that initiated from ideation challenge will most probably increase interest towards challenges and idea management tool. This was also demanded in open comments of the second survey and as a factor that encourages to use the idea management tool more. It could have been asked in the survey that how users have found the tool to discover which information channels have been most powerful in reaching users. Promotion can then be focused accordingly either by concentrating on the most reaching channel or by being more active on other channels.

Participation

User experience survey respondents would like to receive more feedback about given ideas and ideation challenge progress. This was mentioned also by all interviewees, which highlights the importance of the matter. Receiving feedback is related to learning and recognition. It has a dual effect because feedback can be considered an intrinsic motivation factor via learning possibility and self-efficacy and non-monetary extrinsic reward if feedback is informative type. The possibility to see comments given to other users' ideas was preferred according to user experience survey responses. It also promotes knowledge sharing. Active discussion about proposed ideas furthers creativity despite who gives the feedback (de Jong & Den Hartog 2007, 54) even though commenting on complex ideas in a constructive way requires competence in the subject.

Only a few percent of ideas were commented in the idea management tool, and around one-fifth to one-fourth of the ideas were liked. The number of comments and likes was higher in the

second challenge, which may be because of a higher number of users and because users are getting more familiar with the tool and want to try available features. To encourage users to interact with each other, the threshold to comment should be as low as possible. This can be done by affecting intrinsic and extrinsic motivation factors. Intrinsic motivation could be increased by strengthening the sense of community by posting more news and status update notifications about progress and outcomes of challenges (Cabrera & Cabrera 2002, 703) and by increasing sense of capability and appreciation by asking participants to comment, for example, three other ideas. This indicates that their opinion matters. Extrinsic motivation could be increased by recognition (Zheng et al. 2011, 61). For example, users who have commented top three ideas would get their name mentioned when the winners are published, or active users could receive points on the scoreboard or a reward for active participation based on the number of relevant comments.

Making idea management platform interaction more active may lead to new great innovations. Ideas that have been ignored by the evaluation team might get a second chance if they provoke active discussion in the tool. Feature in tool to send automatic notifications when there is activity regarding own idea can technically be done. When users receive feedback and log in to the tool to see it, they may end up scrolling other ideas and comment on those at the same. The more feedback they receive, the more often they log in to the tool.

Evaluation

Based on comments given in both surveys, idea processing was felt slow. This may be diminished by improved communication about the process. In the challenge front page, there could be added schedule of evaluation and shortlisting periods and final decision date. Users can also select how often they receive update notifications from the tool. These automatic notifications could be made more informative during the challenge by adding information of received ideas and the status of the process. Fast action is a key factor in creating innovations (Soukhoroukova et al. 2012, 110). Therefore, the innovation challenge process needs to be smooth and straightforward. Four weeks participation phase followed by four weeks evaluation and selection phase may feel long if the idea is proposed on the first day of the challenge and there are no updates until the challenge is closed. When considering the whole innovation

process, the idea proposition is just a beginning after which the actual idea development starts so reducing challenge time would not affect greatly on innovation schedule as whole.

Evaluation of ideas takes time and requires cognitive skills. In case company evaluation responsibility was divided among several evaluators, which makes it less laborious per one evaluator. If considering the number of proposed ideas, a total of 818 ideas in two challenges, the time used for idea evaluation among several evaluators cannot be considered overwhelming. However, giving more detailed feedback on each idea would take much more time and cannot be done with current resources. Improvement in evaluation properties of idea management tool is recommended to make evaluation easy and to have evaluation result in the same system with the ideas. Based on 'Wisdom of the crowd' -theory, the average result of several individual judgments is relatively accurate because a large number of opinions moderates the variation (Onarheim & Christensen 2012, 661). This is supported by Riedl et al. (2010, 15), stating that by well-designed rating mechanisms in crowdsourcing, the crowd's idea evaluation accuracy can achieve the same level as experts.

Based on these findings, employee evaluation could be utilized so that users can volunteer as evaluators and ideas are allocated to volunteered users for evaluation. The more volunteered evaluators there are, the less effort it requires from each of them. When users volunteer themselves and are not forced to make evaluations, they are expressing their interest towards the task and are more committed to perform it. Coaching and information sessions for volunteered evaluators' network could be arranged. This reinforces their sense of belonging to a community and provides a learning opportunity. Volunteered evaluators could inform their areas of expertise to allocate ideas for evaluation based on that. This would increase the likelihood that idea content is understood correctly and strengthen volunteered evaluator's sense of capability and being able to help others.

Another option is to utilize a vote-feature of the tool so that in the first round of idea shortlisting, most voted 50 ideas will proceed to experts' evaluation. Employee ratings could also be utilized as a supplement to innovation champion evaluation to draw attention to ideas that are voted high by employees, but innovation champions may have overlooked (Onarheim & Christensen 2012, 670). If voting is used in idea ranking, the visual complexity bias, and ownership bias

have to be considered and effects mitigated. Visual complexity bias can be diminished by very unambiguous evaluation criteria and ownership bias can be avoided by preventing voting of own ideas. (Onarheim & Christensen 2012, 663-664.) The final decision-making authority needs to remain as fewer experts' responsibility to ensure proper innovation management and product harmonization on the company-wide scale (Kesting & Ulhøi 2010, 74).

Idea promotion and implementation

The idea promotion phase between idea generation and implementation plays important role in ideation contest final phases when own idea needs to be promoted and get jury convinced of its excellency. Jury's coaching for pitching presentations offers an opportunity for learning and growing. The ability to speak for own opinions and promote a view are important skills in many positions in the company. Pitching meetings could be open for anyone to join to attract new users and to share information on top ideas. Virtual events would be easy to organize with available technology.

As interviewed users pointed out, implementation is an important phase of innovation; otherwise, ideas remain just ideas. Applying for a patent for an idea incurs costs. If ideas are never implemented, patent screening gets more complicated as it cannot be validated whether an idea is worth having a patent also for coming years and in which countries. In the survey's open comments, there was proposed a possibility to get involved in idea implementation. Nowadays, when proposed ideas are informed to R&D category managers, there is a risk that ideas end up as tailenders in the queue of development projects and the short momentum of idea breakthrough is missed.

Taking idea providers more involved in idea development and implementation would serve two purposes. First, the idea provider will learn new skills and feel respected and capable, which increases intrinsic motivation and encourages to express oneself. Also, participative organizational culture fosters creativity (Arad et al. 1997, 47). Secondly, an idea provider with a strong personal commitment to the idea is a valuable resource in idea development and implementation (de Jong & Den Hartog 2007, 43). By giving responsibility for attending to later phases of an innovation project, the company can utilize employee's drive and

simultaneously guide them in the right direction by providing support and setting limits to play within. This would create a new kind of social interaction and empowerment, which provoke innovative behavior.

6.2 Idea management tool

There is no registration or account creation needed, which makes it easy to enter the tool. Easiness of using idea management tool, instruction videos and clear challenge definitions are ways to decrease effort put in idea sharing, which enhances knowledge sharing. Tool usefulness was considered the least important factor of given choices which impact motivation to use the tool. This indicates that when there is a willingness to use the tool and share ideas, the inconveniences in tool usage do not prevent it. Also, tool usability was felt very good among survey respondents as well as interviewed users, so they may not see usability as a hindering issue in tool usage.

Some of the improvement proposals from survey respondents concerned properties which already exist in the tool. On tool front page, there are instructions and a link to the existing patenting tool in case the user is unsure whether the idea should be entered in the idea management tool or if it meets the criteria for patentability and should be entered in patenting tool instead. Some users may have missed the note even though it is very visible. This stands for an approach that the tool should be as simple as possible both from the visual and usability point of view. An inspiring visual appearance of the tool makes it attractive. Possibility to add pictures on the idea desktop page, adding links to similar ideas or proposing external sources for additional information based on entered keywords would stimulate users to think creatively and receive new information that can be combined with existing knowledge bringing out new ideas. It requires careful design to update tool outlook and functionalities without impairing its usability.

Tool localization is supported, and the tool is already available in six languages. Adding new channels with different languages in the platform has been made easy, and ideas are possible to sort based on idea submission date or last update date. The possibility to add co-innovators in the tool can be added. For now, users have added the name of the co-innovator in the idea

description or in the comment field. When @-mark is used in mentions of co-innovators, they will also receive information when there is activity regarding the idea.

Automated detection, whether similar ideas have already been entered in the tool, was discussed with the platform provider, but currently, there is no easy solution available. Ideas are grouped by the challenge to navigate the tool easily. This may get more visible to users when more challenges have been arranged. The search function in the tool can be used for finding ideas by idea number, idea submitter or by any word it contains. This way, users can browse ideas according to their interests and check themselves if there are already proposed similar ideas that they have in mind. So far, there have been a couple of similar ideas, but it is not seen as a problem in the R&D department. Regarding the rights for an idea, the first submitter of similar ideas can be traced based on the time when the idea was first time entered in the tool.

Communication with the platform provider is important, as well as benchmarking other companies that use the same platform. Platform provider is willing to hear about experiences in the case company to take into account in their development work. Quick fixes to the platform can be made easily, but if more extensive changes are required, it will take several months. Quick fixes that were made based on the survey results were changing e-mail notification address so that messages are no longer directed automatically to the junk e-mail folder. Application for the tool is under development to make participation via mobile devices more convenient. The expected result could be added as required input when entering a new idea into the tool as presented in the seven-step model (Campos-Blázquez et al. 2020, 25-27). This would make the user think about the objective of an idea from another perspective.

6.3 Motivation factors for idea sharing

Even though an individual's intention to participate in the company ideation contest is strongly impacted by personal motivation, it can also be influenced by affective organizational commitment, which means taking actions to help the organization. Organizational commitment can be increased by organizational support and providing an engaging work environment. (Höber 2017, 183-184.) Knowledge sharing is clearly the most encouraging factor for using the idea management tool according to both surveys, with more than 50 percent of respondents

agreeing. This strengthens the perceptions of previous studies and what has been stated in the literature about the importance of knowledge sharing in innovations (Chesbrough 2003, 52-54; Kosonen et al. 2014; Woodman, Sawyer & Griffin 1993, 303-304). Knowledge sharing as an intrinsic motivation factor has also been acknowledged (Kosonen et al. 2014).

The high encouraging impact of monetary reward reinforces the finding by Clegg et al. (2002, 419) about employees' expectation to get a reward if they share their ideas in the idea generation phase. Receiving feedback of own ideas is felt as encouraging as receiving a monetary reward, and its importance as a motivation factor to use idea management tool is supported by the phenomenon of intrinsic motivation (Amabile & Pratt 2016, 167). When considering feedback as a method of recognition alongside reputation and acknowledgment, it can be concluded that gaining recognition has a strong impact on idea management tool usage. This supports the finding reported by Zheng et al. (2011, 79) that gaining recognition affects more than monetary reward on the decision to participate in ideation contest.

The controlling nature of "winner takes all" -type reward may explain why rewards are not the most encouraging motivation factor. The current reward system encourages to participation with great prizes, which only a few idea providers can receive. This kind of reward system has its pros and cons. The high value of the prize raises interest towards the contest and tempts to participate, but a low winning probability may reduce the number of participants and not being rewarded may discourage participants. A system that also rewards hard trying and active contribution could inspire some users more when there is a linkage between the effort and prize. On the other hand, if prizes are shared with many participants, the value per each is dropped and may not tempt that much to participate. To avoid idea quality being undermined by high quantity, non-monetary rewards would be better to use to recognize trying and contribution (Cabrera & Cabrera 2002, 696).

The importance of management involvement was acknowledged among survey respondents in both surveys. This is in line with the claims made in the literature (de Jong & Den Hartog 2007, 57-58; Kesting & Ulhøi 2010, 75-76; Smith et al. 2012, 231). Management's diverse role becomes clear in survey responses. In addition to a general request for higher management support, there were specified certain situations when management involvement is needed.

Reinforcing the importance of idea sharing was seen as the responsibility of heads of departments. Management support was wished in sharing information about the challenge in general and especially for employees with limited language skills or who do not use intranet sites daily. Managers' positive attitude towards idea sharing and innovations encourage employees to participate. Category manager support with ideas was preferred when the idea is moved ahead in the process, and innovation managers' support was called for in extensive utilization of all employees' innovativeness.

Innovation challenges inspire to use the idea management tool. Global challenges are experienced more inspiring than local challenges, which speaks for heterogenous participant group, extensive knowledge exchange and cross-departmental collaboration. Especially among second survey respondents, global company-wide innovation challenges being the second most effective encouraging factor, have a notable role as a stimulus to use idea management tool. As some of the interviewed users pointed out, global and local challenges are not mutually exclusive options but can be used in parallel for different purposes. Besides given options for encouraging factors to use idea management tool, respondents mentioned factors such as open-minded atmosphere, getting new career opportunities, learning, creating a competitive advantage for the company and serving the customer better, which are all linked to reasons that the company has identified to involve employees in the innovation process. Learning and getting new career opportunities have been identified as motivation factors for participating in ideation contests also in literature (Leimeister 2009, 205-206; Zheng et al. 2011, 60).

6.4 Research quality review

Validity

Formulating user experience survey questions precisely to avoid misinterpretation and using a numerical scale for responses where applicable made the topic more concrete and enabled measuring in a codified way. User interviews support the understanding that respondents have understood questions the way it has been intended. Having a wide range of people responding to the survey, using interviews as another data collection method and asking counselors to review the draft version of the results enabled to reach construct validity. The aim of this study

was not to find causal relationships or make generalizations but to understand better the current situation and find ways to improve, so internal and external validity are not crucial in assessing the research validity. To make valid generalizations, more than one case should be studied.

Finer scale in rating questions would have caused wider dispersion in the responses but not affected the distribution between positive and negative opinions towards the topics. In this study, a five-point scale is accurate enough to demonstrate the dispersion of opinions. There was no option “no opinion” to select in the questionnaire, which may lead the respondent to give the score 3, even though there was also the possibility to leave any question unanswered. The number of scores 3 was highest in question 7, which was about training videos’ usefulness. All users may not have watched the training videos, which might lead to unreliable rating. Most of the scores were clearly positive, so the option "no opinion" would not have had a great impact.

Reliability

In this study, reliability is established by an accurate description of study phases so that anyone can perform it exactly the same way again by following the audit trail. Methodological triangulation was utilized as survey and interviews were used as data collecting methods, and results analyzed by both qualitative and quantitative methods. Theory triangulation was applied by interpreting research data based on different theories. Timing of study may cause variance in results. If the study is repeated after a few years, results would probably be different because the idea management tool will be developed, and users will have more experience of using it. In such an interpretive case study, in which timely results are valuable, stability is not the critical reliability assessment criteria.

The user experience survey was sent to all users who had entered the idea management tool during past months so the coverage can be considered high. However, the response rate in both surveys was rather low, and the sample is minor compared to the entire company personnel. The long time between challenge participation phase closure and user experience survey may have affected on response rate. Participants may have forgotten how the challenge was and may not have used the idea management tool after the challenge participation phase. This would

explain the lower response rate in the first survey, as in that case, the time between the participation phase and survey was one month longer than in the second survey. Positive feedback is easier to give, so it might be that all unhappy users have not responded even though revealing their own opinion is a way to influence dissatisfying issues.

The questionnaire was in English. Among the users, there might have been some who did not understand the questions because participating in ideation challenges is possible also in other languages. Most of the proposed ideas in both challenges were given in English, so it can be assumed that the majority of the users can read and write English. Results are based on self-report data from user experience surveys and interviews. Respondents' feelings may have an effect on the responses, either giving more positive or more negative ratings depending on the prevailing feelings. The similar results in both surveys manifest the survey's reliability even though the sampling size is different. Interviewed users represented several functions and cultures. There were similarities in their responses, so the number of interviewed users can be considered sufficient.

7 CONCLUSIONS

The target of the study was to find out how employees' innovativeness can be enhanced through ideation contests. Ideation contests and idea management tool have been recently taken into use in the case company. Employee motivation factors for sharing ideas were discussed in the light of literature and reflected upon the findings of the study. Key standpoints were employee-driven innovations, ideation contests, idea management and motivational factors for idea sharing and participation. The aim was to gather user experiences of employee ideation contests and idea management tool and suggestions on how to develop them. Benefits and potential risks were discussed. Target was met, and improvements were proposed based on the results of user experience surveys and user interviews.

Employees' innovativeness in an organization through ideation contests can be enhanced by advancing collaboration between employees over organizational boundaries through the contests and ensuring fair competition. Ideation contests stimulate employees to think innovatively, which can be furthered by providing constructive feedback. With a neutral idea-sharing platform, employees can get their voices heard, and all employees' ideas will be treated equally. By expressing a positive attitude towards ideation contests, encouraging employees to participate and allowing time for it, managers can enhance employees' innovativeness. When ideation contests are designed to support organization strategy, new innovations will help in achieving the goals at the organization level.

Intrinsic and extrinsic motivation factors affect employees' innovative behavior. The findings of the study support the perception that employees are willing to share their ideas for the sake of knowledge sharing, and it can be advanced through external rewards. By providing opportunities to increase intrinsic motivation, such as learning and joy, and implementing methods to increase extrinsic motivation, for example, by rewards and recognition, an organization can improve the utilization of employees' knowledge and innovativeness. Management can influence an organization's innovativeness by establishing values and creating an organizational culture that supports innovative behavior. Deep-rooted habits and beliefs make the change of organization culture slow. Change towards a more innovative culture can be accelerated by taking actions to encourage participation, openness, risk-taking and

knowledge sharing throughout the organization. Innovative organization culture enables capturing employees' innovation potential, brings competitive advantage to organization and increases employees' job satisfaction, which are all related.

Employees feel ideation contests and idea management tool as a great way to share ideas but would like to receive more feedback on proposed ideas and the progress of idea processing. Idea management tool was felt convenient to use but could be developed to be more structured and to link similar ideas together. Variable contest themes and making ideation contests more interactive would encourage employees to share their ideas more. More visible promotion of ideation contests, idea management tool and outcomes of the contests would inspire to share ideas. Recognizing active participation in addition to best ideas would encourage employees to participate, as well as offering a possibility to get involved in idea development and implementation.

Because ideation challenges have been in use in the case company only for a short time, there is room for further studies about the topic, such as how employees feel the concept after few years and how to maintain interest towards the challenges in the long run. Implementation of ideas generated in ideation challenges could be studied in more detail, for example, what is the success rate of innovations that have initiated from ideation challenges. Avenue for further study is also to investigate the most effective ways of promoting ideation challenges and idea management tool to reach wide coverage with good quality of ideas.

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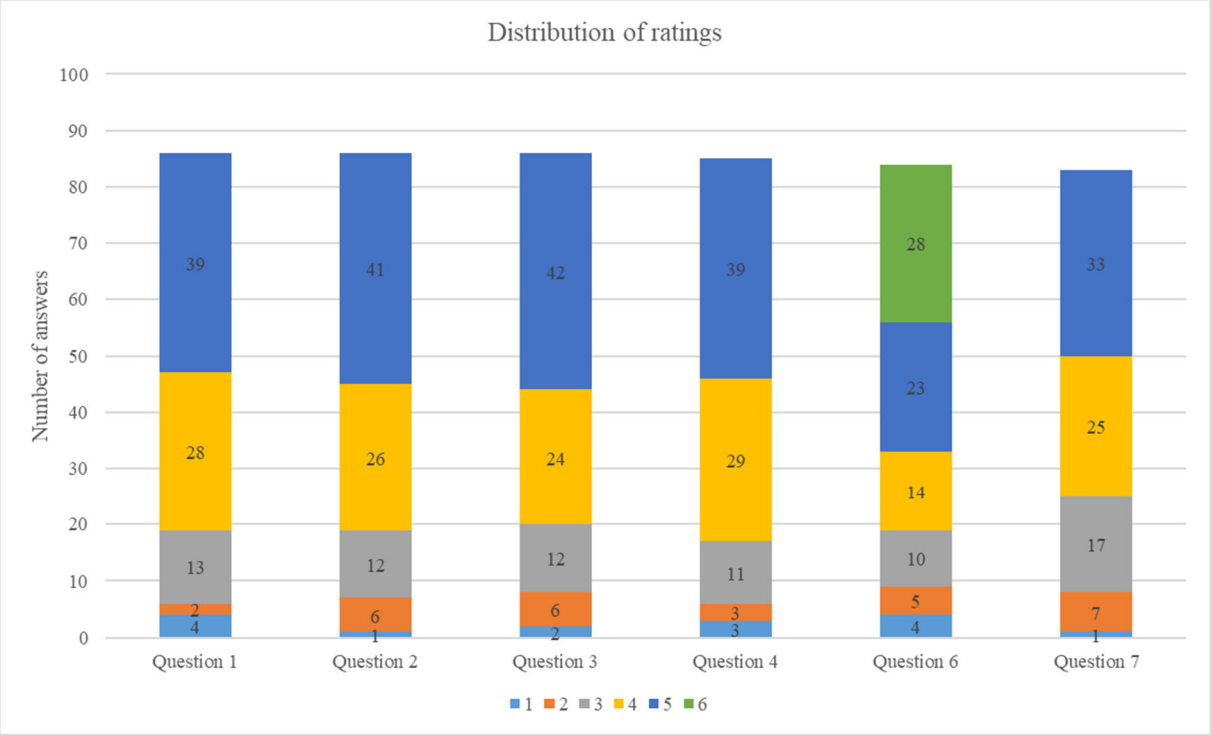
Appendix 1. Distribution of ratings

Survey 1:

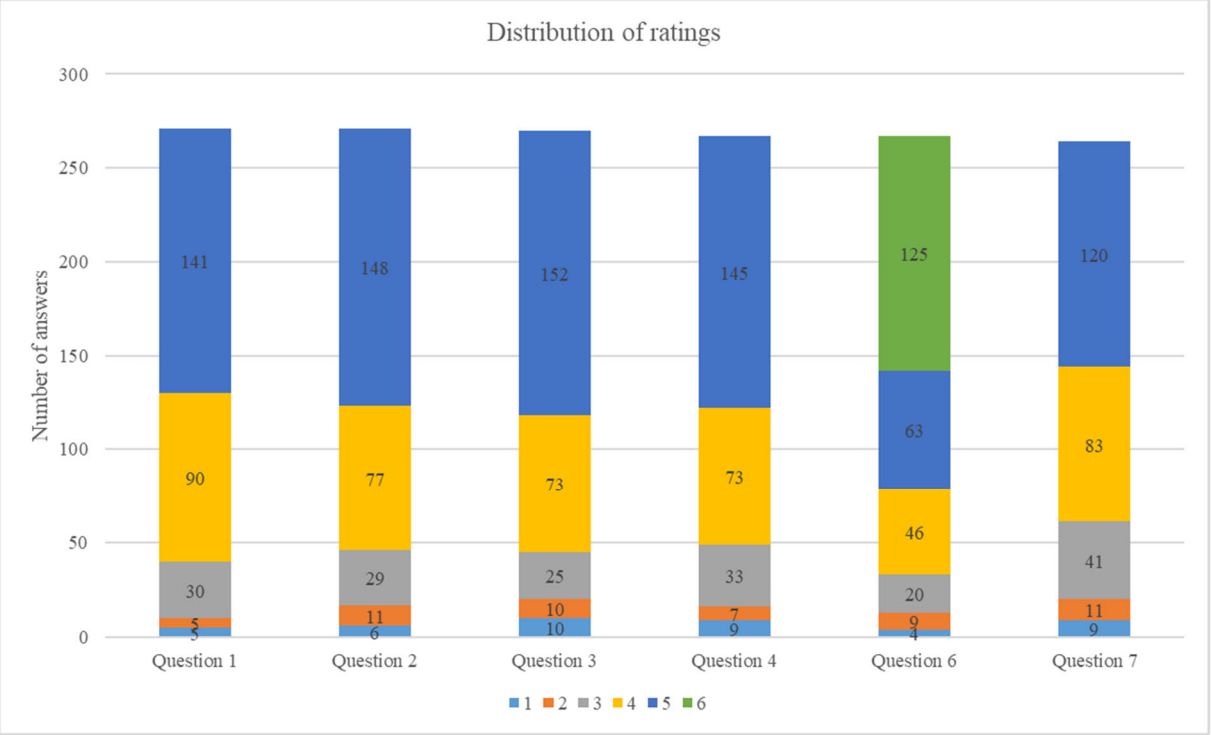


	Question 1	Question 2	Question 3	Question 4	Question 6*	Question 7
Average	4,12	4,16	4,14	4,15	4,56	3,99
Standard deviation	1,06	0,99	1,05	1,02	1,45	1,03
Median	4	4	4	4	5	4
Mode	5	5	5	5	6	5
Share of positive opinions (value 4-6)	78 %	78 %	77 %	80 %	77 %	70 %

* Note! In question 6 rating scale 1-6 was enabled

Appendix 1. Distribution of ratings

Survey 2:



	Question 1	Question 2	Question 3	Question 4	Question 6*	Question 7
Average	4,32	4,29	4,29	4,27	4,99	4,11
Standard deviation	0,88	0,97	1,03	1,00	1,22	1,04
Median	5	5	5	5	5	4
Mode	5	5	5	5	6	5
Share of positive opinions (value 4-6)	85 %	83 %	83 %	82 %	88 %	77 %

* Note! In question 6 rating scale 1-6 was enabled

Appendix 2. Free comments in user experience surveys

Comment category	Number of comments	Notes
Positive feedback	27	11 of 27 positive comments highlighting importance and usefulness of knowledge sharing
Tool / challenge promotion	15	More active and more visible information sharing of tool existence and the challenge requested
Tool development	13	4 proposals to have possibility to see if similar kind of ideas have already been entered in the tool 2 proposals to enable filtering of ideas based on topics 2 comments about e-mails from tool directed automatically to junkmail folder 1 proposal to have own channel for challenge 1 proposal to have possibility to add co-ideator details in the tool 1 comment about slow network when using the tool 1 proposal for better localization possibilities 1 proposal to raise edited/commented ideas to the top of the list in tool
Feedback system improvement	12	More feedback requested about entered ideas and evaluation progress
Tool / process development	11	2 comments about process being too slow 2 comments about process feeling unclear regarding patentable ideas 2 comments about benefits of having fully global evaluation team 2 proposals to have scoreboard / point system to earn rewards and promote ideas 1 proposal to increase collaboration with partners 1 proposal to link the tool with existing patenting tool 1 proposal to have wider view for ideation as it is personal type of process
Sharing information of implemented ideas	3	More information of implemented ideas was requested and proposals to get involved in idea implementation
Other	14	2 unclear comments 2 comments requesting more challenges to be arranged 2 comments highlighting management support importance 2 comments highlighting importance of knowledge development and process simplification in general 2 comments highlighting importance of innovativeness and implementing ideas 1 proposal for next challenge themes 1 proposal to arrange ideation days 1 comment about too many different tools in use 1 comment expressing personal feelings