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Managing internal ideation

A Case study at Bengt Dahlgren Stockholm AB

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KTH Industriell teknik
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Hantering av intern idégenerering - En fallstudie på Bengt Dahlgren Stockholm AB

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Sammanfattning

Intern idégenerering innebär att få de anställda på ett företag att generera idéer för förbättringar och företagsutveckling. I årtal har innovativa företag arbetat med att fånga sina anställdas kreativitet när det kommer till innovation. Om ett företag anses innovativt kan det i många fall bero på det anställdas driv att ständigt förbättra och utöka företagets erbjudande. Att lyckas motivera och engagera de anställda på företaget för att förverkliga en intern idégenerering visar sig vara en svår fråga att besvara. Samtidigt vilka faktorer påverkar intern idégenerering samt vad är relationen mellan dessa faktorer och deras påverkan på idégenereringen. I detta examensarbete kommer dessa frågor att besvaras.

Denna studie har utgjorts av både kvalitativ och kvantitativa studier. För att identifiera de faktorer som påverkar idégenereringen gjordes en recension av tidigare litteratur och sex externa intervjuer. Intervjuerna riktade sig mot företag som designar innovations plattformar samt företag som arbetar med dem. För att förstå hur de olika faktorerna är relaterade genomfördes en fallstudie vid Bengt Dahlgren. Fallstudien genomfördes genom intervjuer och en enkätundersökning.

Denna studie resulterade i ett ramverk som beskrev faktorer som påverkade den interna idégenerationen och deras interrelationer. De viktigaste faktorerna för intern idégenerering var: *Tydlig Vision, Resurser, Ansvarsroller, Tillgång till Information, Kommunikation, Interaktionsarena, Motivation* och *Kultur*. En regressionsanalys visade samband mellan dessa faktorer och deras påverkan på olika variabler som påverkar ett företags innovation förmåga. Undersökningen inkluderade tre variabler för innovation förmågan: företagets kultur, de anställdas ansträngning för att komma med idéer och antalet inlämnade idéer per person. Denna studie utvecklade också en rekommendation för Bengt Dahlgren hur dem ska använda faktorerna för att öka deras interna idégenerering.

Nyckelord: Idégenerering, Intern idégenerering, Intern innovation, idéhanteringssystem.



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Abstract

Internal ideation refers to getting the employees of a company to generate ideas for improvements and business development. Innovative companies have been working to capture their employees' creativity when it comes to innovation. In many cases, a company that is considered innovative depends on the employee's drive to continually improve and expand the company's offering. How to succeed in motivating and engaging employees at the company to create internal ideation proves to be difficult to tell. At the same time, what factors influence internal ideation and are their inter-relationships between the factors and their influence on the ideation. This study aims to answer these questions.

This study consists of both qualitative and quantitative studies. A review of previous literature and six external interviews were conducted to identify the factors that influence internal ideation. The external interviews targeted companies that design idea management systems and companies that work with them. A case study was conducted at Bengt Dahlgren to understand how the various factors influence ideation performance. The case study was performed through interviews and a survey.

This study resulted in a framework describing factors influencing internal idea generation and their inter-relationships. The most important factors for internal idea generation were: Clear Vision, Resources, Responsibility, Access to Information, Communication, Interaction Arena, Culture, and Motivation. A regression analysis revealed the inter-relationships between these factors and their impact on various innovation performances. The investigation included three variables for innovation performance, the company's culture, the employees' ideation effort, and the quantity of ideas submitted. In this study, a recommendation was made for Bengt Dahlgren to utilize the factors to increase their internal idea generation.

Keywords: Ideation, Internal ideation, Internal innovation, Idea management system.

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1. Introduction

In this section the background of the study is presented followed by a problem definition. Further, it presents the purpose and delimitations of the study.

1.1. Background and problem definition

Innovation starts with ideation, the process of generating ideas. Even though innovation is essential to a firm's competitive advantage (Porter & Ketels, 2003) and the main driving force of progress and success (Volberda, Van Den Bosch, Heij, 2013). Firms fail to take full advantage of their employees' creativity. The employees are an excellent source of innovation due to their knowledge about the firm's products and processes. However, how a firm should manage internal ideation is a complicated matter. To not miss internal ideas from employees' firms, need a structured approach for their internal ideation.

With a structured and managed internal ideation, firms can deal with future challenges. This is possible when firms work with ideation continuously. Structure and manage internal ideation for a firm is not entirely clear, and there are many factors to consider in order to create a process that works for the firm. Even though the research in this field has been increasing in later years, there is still much unknown (Zuchowski et al., 2016). The factors to consider for successful internal ideation and how they should be involved in a process are not fully understood. Furthermore, the implications of the factors on the ideation outcome are neither clear. By changing the different aspects and inputs in internal ideation, it can be possible to direct its outcome.

In today's market, there are several firms offering custom made idea management systems for companies to ease their internal ideation. This is due to the increasing focus on innovation. To get the desired result from an internal ideation process firms need to have a clear structure for their innovation process. Even though there are great tools for collecting ideas, companies have issues to get the result they want. This complication can potentially frustrate the managers since there are no real guidelines for the best practice when it comes to managing their ideation. This leads to innovation management that lacks direction, which will underflow the firm's innovativeness. This lack of direction can lead to a risk of a loss of value for their stakeholders. Further, it recognizes the importance of creating a sustainable innovation structure for a firm.

To work with ideation successfully in a firm takes more than just launching an idea management system and encouraging employees to use it. However, this is what many firms do, and it is setting them up to fail. To not have a structured way of working with the system to enhance the experience for the users and to focus on innovation will lead to a system that nobody uses (Beretta, Björk, & Magnusson, 2017). Even though the system itself offers many different functions, its integration into the firm needs to be managed. This integration needs to be formed depending on what outcome the firm wants from the system. This is the difficulty with idea management systems since every firm has its own innovation goals; there are no specific best practices for managing their idea management system.

1.2. Purpose

The aim of this master thesis is to investigate how a company can design and use a system for internal idea generation that enables employees to contribute to innovation in an active and effective manner. This project discusses and maps the different factors that are involved in ideation. As well as the interrelation between ideation factors and their impact on the ideation output.

To provide guidance for this study and drive it forward two research questions were formed:

RQ1. What factors are important to take into consideration for internal ideation?

RQ2. What are the interrelationships between the ideation factors and their effect on the outcome of the ideation phase?

This master thesis is conducted in collaboration with Bengt Dahlgren, who has recently implemented a digital idea management system in their organisation. This study investigates how they are working with their internal ideation and how they can change or complement their way of working with the it.

1.3. Delimitations

This master thesis was conducted for 20 weeks during the spring of 2020. It is a master thesis conducted by two students from KTH Royal Institute of Technology. The study was performed in collaboration with Bengt Dahlgren Stockholm AB. and is focusing on their office in Stockholm. The project's limitations were mainly in the form of time and money. This limit made the study only to be performed within Sweden. Due to the pandemic, COVID-19, only a limited number of interviews were conducted in person. The time limitation made it not possible for the authors to test any theoretical work. Therefore, the recommendation at the end of the report is for the innovation management at Bengt Dahlgren to incorporate into their daily work activities.

2. Exposition of theory

Chapter two describes ideation management's theoretical framework in terms of what ideation is and how to manage it. In this chapter, idea management systems are explained and the benefits with them. The theory leads to the research questions of this thesis and later to the building of the tentative framework for further investigation.

For an organization to be innovative and continuously produce new and improved products and services, organizations need successful ideation management (Adams, Bessant & Phelps, 2006). According to Volberda (2013), innovation management is about changing a firm's organizational forms, practices, and processes in a way that is new to the firm. For a firm to stay innovative, it is important to integrate the focus on innovation into its culture and align with the firm's strategic goals (Abdullah, Wahab & Shamsuddin, 2016). Innovation can happen everywhere and not just under working hours. The innovation management's main objective is to be able to catch the ideas whenever they occur. To then develop the concept through discussions and reasoning that it ultimately creates value for the company.

The foundation of innovation and new development for processes and products is a robust Front End of Innovation (FEI) (Koen et al., 2001). FEI is the first phase of innovation and starts with generating an idea and ends with an idea forthcoming to development or decided to be terminated (Murphy & Kumar, 2002). Although FEI is considered a crucial phase for a company's success for new products, it is also considered a difficult stage to structure and manage (Reid & de Brentani, 2004). This is mainly due to ideation's nature and the uncertainty of finding new ideas that will lead to a valuable development (Herstatt, Verworn & Nagahira, 2004). Therefore, companies tend to focus on the development process instead of generating new ideas because it is easier to structure and follow. To challenge the FEI process and to strive for creating a strong FEI process, it is important to increase the innovativeness at a firm (Koen et al., 2001). Leavy (2005) argues that firms need to find a balance between innovation and efficiency to structure their FEI. If the structure is too rigid, it will decrease the general creativity in favour of more incremental ideas only. On the contrary, if the structure is too open, it will loosen the focus, and the results will suffer.

2.1. Internal ideation management

Creating and discovering new ideas, then capturing and building on them through a systematic process, is referred to as ideation. It is the process of generating new ideas. To create a continuous flow of new ideas for a firm, they need a systematic process that will include both creativity as well as resources set from the organization (Kock, Heising, & Gemünden, 2015; Björk et al., 2011). Creativity is the main driver for idea generation, according to Bakker, Boersma, and Oreel (2006), although creativity alone does not guarantee the submission of good ideas to the idea management.

While some believe that ideation is considered the first phase of any innovative project (Björk, Boccadelli & Magnusson, 2010; Rietzschel, Nijstad & Stroebe, 2010), other researchers argue that the ideation process should not be part of an innovation project at all. Instead, it should be a preliminary groundwork that should be executed and well-reviewed before the innovation project starts (Brix, 2012). In line with this, Brix (2012) observed that ideation had been down prioritized in many innovation processes. Zhang and Doll (2001) state that: "Most projects do

not fail at the end; they fail at the beginning." They argue for management to be more critical and structure the requirements for ideas to produce more adequate ideas. Ideation processes as the first phase of any innovation project can be fuzzy and demand many resources, such as money and time. In order not to waste resources on poor ideation processes, the employees need a shift in mindset and general business to create the project management and their organization (Rietzschel, Nijstad & Stroebe, 2010).

Internal ideation or internal crowdsourcing, as it is commonly referred to, is when a firm focuses on ideation that happens inside the firm itself. Research suggests that it is easier to generate good ideas for innovation if the person that comes with the idea has background knowledge about said technology or subject (Magnusson, 2009; Füller, Hutter, Hautz & Matzler, 2017). This makes employees a perfect source for ideas since they know how the firm works and what they are producing. This knowledge of the subject gives the employees a useful insight into what ideas will work and not, which increases the quality of the ideas and suits the firm.

Generating new and novel ideas is the core of ideation, and innovation has lately been investigated immensely. Historically there has not been a formal process rather than organizations relying on individuals to initiate ideas on their own. However, today firms have realized the potential of staying innovative and strives to be continuously updated. This has led to a focus on ideation strategies. A positive influence on the project portfolio can be gained by using a formal ideation process at a firm (Heising, 2012; Kock, Heising & Gemünden, 2015).

Depending on what kind of innovation the firm desire the innovation process can use different forms, since different methods are more efficient for different kinds of innovation outcomes. Firms need to use a formal process to optimize resources for their desired outcome (Persaud, 2005). Beretta, Björk, and Magnusson (2017) argue for a structure of managing ideation that is formalized and involves both a strategy for the ideas and building a community around it. In their research, they emphasize that it is important that management finds a balance between three objectives; formalized process, strategy, and community building in order to create a well-functioning system. Focusing too much on one or the other will likely lead to a negative effect on the ideation. This is in line with other research that presents that to create successful ideation management, firms need to create a system that underflows the whole structure to build an innovation network that involves all departments (Gamlin, Yourd & Patrick, 2007). In this way, a sort of community can be formed that enhances ideation.

The network surrounding the ideation process influences the outcome as well. It is essential to have both employees come up with ideas and a connector that can connect the idea with a relevant source for implementation (Whelan, Parise, de Valk & Aalbers. 2011). Using this technique, the idea connector is an employee or a group with an extensive network in the firm who can connect the idea with the relevant department for further investigation. An innovation or idea will need a committed owner that is responsible for the development of the idea. This ownership will increase the chance of implementing an innovation (Boeddrich, 2004).

Furthermore, to have a successful internal ideation process, one main aspect should be the employees' motivation to participate. A firm can motivate its employees to participate in many ways, and they need to consider that employees are motivated in different ways and at different levels (Zuchowski et al., 2016). Some of the employees get motivated by developing and submitting more disruptive ideas. In contrast, other employees will feel motivated to create and present ideas that improve their work situation by making it easier or safer to work. A firm can

use a range of incentives to motivate employees, like monetary rewards, to more intrinsic rewards that boost the employee's recognition within the firm.

The means of integrating the employees into the ideation process also needs to be considered. However, the question of how to incorporate them is unclear in earlier research. From a managerial means, there are two specific methods for this integration: competition and collaboration (Bergendahl, Magnusson & Björk, 2015). Research suggests that in order to motivate employees for ideation and creativity to a high degree, employers should consider the use of both collaboration and competition in a paradoxical integration (Bergendahl, Magnusson & Björk, 2015). Due to both concepts are drivers of intrinsic motivation. By combining competition and collaboration mechanisms in ideation processes, management can enhance the ideas of quality and quantity (Bergendahl, Dagnino, Ferrigno & Magnusson, 2015). There is a range of different tools to support management in structuring the employees. Below is the tool idea management system further described, which is one of the latest trends when it comes to internal ideation.

2.2. Idea management systems

Recently, the physical idea box has undergone significant changes to adapt to today's technology and development. Today, it is most likely that a company uses a sophisticated IT-based idea management system for internal innovation. These platforms can be divided into two groups, software specially designed for internal crowdsourcing or a generic social IT platform (Zuchowski et al., 2016). The generic social IT platform is a multi-purpose tool for social interaction in the firm, which can be used for internal crowdsourcing as well. For example, a firm's intranet can be used as a platform for generating ideas and evaluating and developing them in collaboration with other employees.

There are many different platforms on the market for specialized software and are referred to as idea management systems. An idea management system is a modern recreation of the old suggestion box. It is a digital platform that companies can use not only to store internal ideas but also to continue building on them and structure their innovative work. The design of these platforms varies from different providers; however, the primary function is the same. The employees have the option to add ideas in different missions or areas, such as different departments or defined categories. These ideas can be visible for all employees or only a selected few. Other employees have the option to comment or add remarks to the original ideas in order to build on them. Within these platforms, the responsible innovation management can add focus areas and structure the back end of innovation.

These platforms promise a perfect tool for innovation. However, there is a need to treat different types of innovation in different ways. Sandström and Björk (2010) argue that using a dual innovation management system is required to elevate the process of handling continuous and discontinuous innovation. Depending on what kind of innovation a firm desire, the method of ideation changes. Incremental ideas tend to be easy to find in a structural way, while disruptive or discontinuous ideas need a more informal structure (Veryzer, 1998). Otherwise, discontinuous ideas tend to be sorted out in further development processes. This implies that an idea management system needs to be constructed in such a way that it allows both kinds of innovations.

In later years numerous companies have started to offer this kind of digital tool, and many companies have implemented an idea management system in order to increase their internal innovation level. However, to be successful using an idea management system, firms need to be aware that just implementing the software will not be enough (Beretta, Björk, & Magnusson, 2017). The problem is more complex and needs to be actively managed to work successfully (Gamlin, Yourd & Patrick, 2007; van Dijk, van Den Ende, 2002). The discussion of how the management should work actively with the system is an assortment of different viewing points.

2.3. Factors that influence internal ideation

To further develop a framework for ideation management, the three main factors have been investigated to identify what sub-factors influence them and, therefore, influence the internal ideation. This investigation is presented below.

Clear vision

Having a clear vision helps the organization in many ways. It keeps the organization focused, and it identifies warning signs of ineffectiveness. Clear vision also has a positive impact on employees. It makes them feel more efficient and goal-oriented (Kilpatrick and Silverman, 2005).

To generate better ideas from employees, it is essential to relieving strategic guidelines for innovation. These guidelines positively influence the ideation by providing employees with the aim of their ideation (Kock, Heising & Gemünden, 2015; Boeddrich, 2004). The strategic aim of a firm should as well be aligned with the firm overall corporate vision in order to include all relevant ideas. Kock et al. (2015) argue that having a strategy only for the ideation will limit the influence on FEI success. However, if a firm can connect their ideation strategy with the firm visionary goals, the chance of success is shown to increase. Cooper and Edgett (2008) also state that the top reason for internal ideation not to work is not adequately focusing on the ideation. There is a need for companies to focus the ideation on problematic areas in order to gain ideas for solutions that are in higher quality and that are more adept for the company.

In line with setting strategic guidelines for ideation, a firm should set real-world requirements for their ideation to better influence employees to create better ideas. A firm should use these requirements to specify their expectations for the ideation and provide the employees with a base for their ideas (Vukovic, 2009). The requirements should be set in order to limit the resources spent on innovations. Setting requirements for ideas makes it easier to reject if they fail in the requirements. Using resources will also reduce the risk generated by the uncertainty of innovation projects (Hesmer et al., 2011).

Furthermore, to enhance the process of generating ideas for innovation, a firm needs to focus on creativity. Firms that can specify a focus area in the new product development processes have a positive influence on their innovation level (Salomo, Talke & Strecker, 2008; Gamlin, Yourd & Patrick, 2007). This can be derived to the point that it is easier to find an idea if a more defined and specific problem is presented. In order to be able to focus the creativity, the managers of the ideation should adopt a more holistic view of the whole FEI process (Heising, 2012). One way of focusing the ideation is by campaigns. Campaigns are when a company identifies an area where they believe improvements can be developed and focusing their ideation around that area. The use of campaigns for ideation is providing two main benefits.

According to Elerud-Tryde and Hooge (2014), campaigns support employees' creativity and involve the whole company in the idea generation. A well-defined campaign focuses on a problem at hand, which makes employees more able to conceive new ideas regarding the problem. Using a digital idea management system will make it possible for all employees to be involved in the ideation. This brings a broader perspective for the ideation process.

Access to information

For a well functional idea generation, knowledge is vital. There is a higher certainty to produce an idea that will fit as a solution if the person has knowledge and information about the subject (Magnusson, 2009). Therefore, employees a great source of innovation due to their knowledge of their own work. However, not all employees know everything about the organization and how different departments are working, which presents a challenge for ideation. Though some novel thoughts can be beneficial for innovation, due to new perspectives (Chesbrough, 2004), a good base knowledge of the objective is preferred. Chesbrough (2004) further explains that a perspective from a beginner who does not have much knowledge of a problem can increase the subject's knowledge by highlighting things that an experienced user would not recognize. Chesbrough's research is mainly investigating the use of open innovation for ideation. However, the view on knowledge sharing is adaptable for internal ideation by implementing an idea generation system that focused on knowledge sharing between different departments.

Sharing the information will increase the quality and number of ideas generated (Björk & Magnusson, 2009; Elerud-Tryde & Hooge, 2014). Björk and Magnusson (2009) found that people with a more extensive connecting network within an organization have an increased chance of generating higher-quality ideas. For management, this research suggests that it needs to be a structural way of a meeting point where different individuals can share their ideas and comment on other ideas. This would increase the outcome of the ideation by increasing the information sharing between the organization. Elerud-Tryde and Hooge (2014) argue that it is essential to include both higher management and lower-level employees to increase knowledge sharing. This will increase both the diversity and the network surrounding the ideation process, which is believed to increase internal ideation (Zuchowski, Posegga, Schlagwein & Fischbach, 2016).

Furthermore, to be able to access information regarding the innovation process, the structure of the process should be well defined and transparent for the employees (Boeddrich, 2004). This is to provide the employees with a way to follow what happens with their ideas. To have transparency in the ideation process will further encourage employees to generate ideas and build on others (Vukovic & Naik, 2011).

Moreover, to succeed with idea generation, the barrier for the contribution of an idea should be as low as possible. Using an easy access methodology for a platform where the ideas are gathered would be necessary to encourage participation in ideation (Rohrbeck, Thom, & Arnold, 2015). To further motivate employees to submit ideas for innovation, there is a need for a feedback mechanism. Providing feedback on what has happened to a submitted idea to the idea contributor will enhance the motivation for them to contribute more and encourage them to follow their ideas (Gamlin, Yourd & Patrick, 2007). This will make it vital for a firm to provide information on the innovation process to its employees and continuously provide updates on successful ideas.

Motivation

Integrate employees into the ideation process has the potential to increase the company's innovation rate. Employees due often have a good knowledge of the parameters for a solution and have the advantage of identifying a solution that will fit (Magnusson, 2009). It is also proven that employees desire to improve their work and efficiency (Lloyd, 1999). These benefits signify the importance of involving the employees in the ideation process.

When firms involve larger numbers of employees in ideation, it is to get a large part of the knowledge from them to work on generating new ideas for innovation. This has become easier thanks to new technologies, such as the idea management systems discussed above. However, the question if integrating every employee or just a selected few is still under debate. By including all employees, firms have a higher ideation diversity, which elevates creativity and produces more ideas (Stieger et al., 2012). However, there is no direct link between the number of ideas and their quality (Frese, Teng, Wijnen, 1999). This presents the problem of having many ideas or fewer ideas of higher quality.

Building a community surrounding the innovation process, a company can increase the motivation of participants to contribute with ideas (Zuchowski et al., 2016; Dahlander, Magnusson, 2008). A firm can gain a lot of employee integration for internal ideation. The community can be open for all employees in order to elevate the diversity or only open to a selective few. However, the feeling of belonging to a group such as a community is proven to be motivational (Zuchowski et al., 2016). Collaboration can boost the creative process and ideation. This is done by innovation management will let individuals collaborate in a group to generate ideas. It has the potential to raise the intrinsic motivation in the group or groups by members influencing each other for ideas. If done right, this is a powerful technique for generating a wide variety of relevant ideas (Paulus PB, Baruah J & Kenworthy JB, 2018).

One popular way of increasing the motivation of employees is using monetary rewards. The thought is that employees that are creative and working actively with innovation are rewarded with a monetary price. However, the implications of this are somewhat controversial. On the one hand, research shows that rewards do encourage some of the employees (Chiu, 2018). On the other hand, the subject is more complicated than merely offering rewards, and employees need to see the link between idea and a successful performance (Fairbank & Williams, 2001). The theory that monetary rewards increase motivation is nevertheless popular, and companies are inclined to use rewards. Any incentives, material, or nonmaterial rewards have a positive impact on motivating employees to generate ideas (Gerlach and Brem, 2017; Frese, Teng, Wijnen, 1999). How the incentives are given and what kind are problematic.

Another way of managing ideation is by creating a competitive landscape to boost idea generation. This will enhance the motivation of employees by challenging them to compete for the best idea (Morgan, J. & Wang, R., 2010). A contest can offer both a monetary prize and an emotional prize, like pride over the contestant's contribution. However, there are hazards in using competition as the sole motivational tool for creativity. The implication is that it can harm the internal organization by limiting knowledge-sharing among employees and lowering the trust and loyalty within the organization (Bergendahl, Dagnino, Ferrigno & Magnusson, 2015).

Organizational culture is at the core of innovation. Culture has a significant impact on innovation in different ways consisting of socializing processes and the value proposition, which are communicated through structures, practices, and procedures. Organizational culture

is one of the factors that are determinants of creative behaviour in organizations (Sharifirad, Ataei, 2012). If organizational culture is not taken care of in a satisfactory way, it can reduce the efficiency of an organization (Martins, Terblanche, 2003).

2.4. Tentative framework

In order to manage internal ideation and gather ideas from employees, the management needs to create a setting that enhances this process. The ideation process structure will be formed differently in each company, depending on the desired outcome. However, independent of what the firm wants, ideation's three main factors have been identified in the literature. These factors are essential for a successful ideation process and are presented in Figure 1. The three factors are Clear vision, Access for information, and Motivation. The management and balance of these factors will influence the outcome of a firm's FEI in terms of type-, number- and quality of ideas.

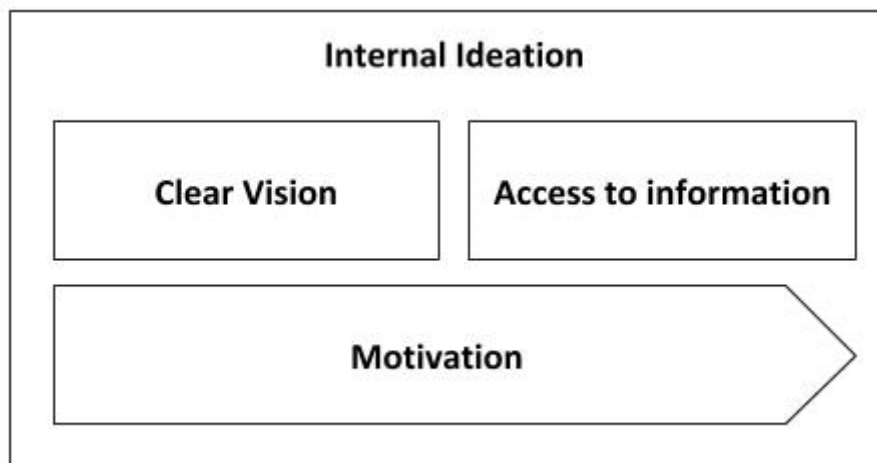


Figure 1: Main factors for ideation

Clear vision intends that the management needs to have a clear strategic vision with its ideation. Employees should be able to find out what they are supposed to generate ideas about or the complete aim of the ideation. Access to information refers to the transparency of the ideation process, motivating and upholding employee engagement. Employees should be able to access information regarding their ideas and others, what has happened to the ideas, and wherein the innovation process are them. To successfully make internal ideation happen, the motivation of the employees is essential. Because, in order to gain ideas, employees need to be motivated to propose them.

To further define the three factors, several individual sub-factors were identified. These factors stem from previous research in ideation. A summary is presented in Table 1. These sub-factors are linked to the three main ideation factors, and all are considered important in the structure of ideation management.

Table 1: Factors influencing the ideation process

Main factor	Subfactor	Reference
Clear vision	Strategy	(Kock, Heising & Gemünden, 2015) (Boeddrich, 2004) (Cooper and Edgett, 2008)
	Requirements	(Hesmer et al., 2011) (Zhang & Doll, 2001) (Vukovic, 2009)
	Campaign	(Salomo, Talke & Strecker, 2008) (Magnusson, 2009)
Access to information	Transparency	(Boeddrich, 2004) (Vukovic & Naik, 2011)
	Idealoop	(Björk & Magnusson, 2009) (Elerud-Tryde & Hooge, 2014)
	Feedback	(Gamlin, Yourd & Patrick, 2007)
Motivation	Recognition	(Zuchowski et al., 2016)
	Incentives	(Chiu, 2018)
	Integration	(Bergendahl et al., 2015) (Bergendahl, Magnusson & Björk, 2015) (Morgan & Wang, 2010) (Paulus, Baruah & Kenworthy, 2018)
	Community	(Dahlander & Magnusson, 2008) (Zuchowski et al., 2016)

Clear vision includes the subfactors, Strategy, Requirements, and Campaign. All these subfactors provide the employees with a clear vision for what the company wants from the ideation. As well as what requirements they must fulfil to get the resources they need to realize an idea.

Access to information includes the subfactors, Transparency, Idealoop, and Feedback. These subfactors are integrated into access to information since all of them are providing the employee with information. This information will, according to the theory, enhance their ideation activities.

Motivation includes the subfactors, Recognition, Incentives, Integration, and Community. The factor of motivation is providing the employees with the motivation to incorporate ideation into their daily work, motivating them to submit ideas for improvements when they have one. This may be the most crucial factor because if the employees are not motivated to ideate, the whole process will fail.

3. Methodology

Throughout this project, a variety of different methods and processes have been used to gather relevant data and knowledge. Firstly, a literature review was conducted to establish the current state of theory. This to support the construction of a theoretical framework. To expand the framework by finding out if there are several other factors which affect internal ideation, a set of semi-structured external interviews were performed at six different firms. Three of these firms have an idea management system and the other three firms develop and design idea management systems for other companies. Moreover, a qualitative single case study was performed at Bengt Dahlgren. The single case study started with analysing the company's current state of ideation. This was done by quantitative research through a survey. The data from the survey was analysed to explore the interrelationships between the ideation factors and the ideation output. Moreover, a set of semi-structured interviews were performed with employees of different levels in the company hierarchy. The data was later analysed to understand how the company works with ideation today and how they can improve.

3.1. Research setting

This project was conducted in collaboration with Bengt Dahlgren Stockholm AB. Both Bengt Dahlgren and KTH Royal Institute of Technology provided supervision for this project. Bengt Dahlgren provided two supervisors for the project Anna Larsson, the manager over the innovation group, and Mathilde Jonni, a member of the innovation group. The supervision from KTH was conducted by Mats Magnusson, a professor at Integrated Product Development and Design at KTH Royal Institute of Technology. All three supervisors helped with the planning and structure of the project by provided guidance for the researchers.

Bengt Dahlgren Stockholm AB

Bengt Dahlgren Group was founded in 1952 and is now one of the leading consultancy firms in the field of civil engineering in Sweden. It is a group consisting of six different companies, which are mainly divided by geographical areas. The different companies are Stockholm, Gothenburg, Linkoping, Skovde, Syd (South), and Brand and Risk (Fire and Risk department). The company has active consultants in a variety of different disciplines of civil engineering, such as fire and risk, energy, installation, and environment. Bengt Dahlgren has over 550 employees in Sweden who are working both nationally and internationally. The organization's vision is to become the first choice for both customers and employees, which is demonstrated by them through being named best employer in Sweden 2018. (Bengt Dahlgren AB, 2020).

This study was preliminary conducted in collaboration with Bengt Dahlgren Stockholm AB. It is Bengt Dahlgren Groups Stockholm offices, with around 160 employees. Bengt Dahlgren has encountered rapid growth in employees in the last years and needs to arrange their innovation work in a more structured way. In the fall of 2019, the CEO of Bengt Dahlgren Stockholm AB decided to try an idea management system at the company, to start structuring their ideation. Thereby a group of employees was initiated to launch the idea management system, together with an external consultant started to structure the ideation at the company. In the idea management system, employees can add ideas which are then evaluated and later may be implemented. However, since the program was introduced, the innovation group has seen limited activity in the program.

External organizations

Companies either using or creating an idea management system were contacted. The purpose of this was to collect information from people that have experience in ideation work and how they are working with the problematic areas of it. This data extended the theoretical framework to include earlier unnoticed factors. Upon request from the companies, they are anonymized. In Table 2 a short description of the companies is presented.

Table 2: External companies participating in the study

Company Alias	Number of Employees	Type of contribution
Company A	100 - 200	Designs and distributes an idea management system to organizations
Company B	10 - 50	Designs and distributes an idea management system to organizations
Company C	10	Designs and distributes an idea management system to organizations
Company D	10 000 – 20 000	Works with innovation by using an idea management system
Company E	10 000 – 30 000	Works with innovation by using an idea management system
Company F	5 000 – 10 000	Works with innovation by using an idea management system

3.2. Research Design

Within this study, the researchers are investigating internal ideation management to understand what factors need to be considered for managing internal ideation, and what are the interrelationships between the ideation factors and the ideation output. The research design structure in this project is an exploratory methodology (Kothari, 2004) because the researchers believe that there are new elements to discover in ideation management. In order to be able to investigate different factors that are found, this project uses a flexible schedule to be able to align with early findings (Kothari, 2004).

The identified factors from previous literature made a tentative framework. The tentative framework originates from a literature review on prior studies about internal ideation management. The framework consists of three overall factors as well as sub-factors for each of them. All of which are considered essential to structuring an internal ideation process. Furthermore, the external interviews revealed even more factors as well as a better understanding of the connection between factors. Through the literature review and the external interviews, the framework for internal ideation got further redefined.

The chosen method for investigating the company is a single case study, due to a single case study giving a higher quality of theory since the researcher can come closer to the problem

(Eisenhardt, 1989). The aim of designing a process for the specific company made a single case study the most practical way forward since the process needs to be tailor-made.

The single case study was performed by gathering and analysing both qualitative and quantitative research, with interviews and a survey at the company. To investigate the company's current situation, the researchers conducted interviews with employees. To reveal what they think of the current system and explore improvements. The survey complemented the findings from interviews while also exploring the interrelationships between ideation factors and the ideation output.

3.3. Literature study

A literature study was performed to create an exposition of the current theory. The collection of relevant articles was primarily gathered through two databases: Google Scholar and KTH Primo. The keywords used in order to search for relevant articles are listed below.

Innovation management	Ideation	Internal crowdsourcing
Front end of innovation	Idea generation	Suggestion box
Idea management system		

These keywords were also reconstructed and reformed throughout the project in order to include as many relevant articles. Other articles were found through the references of relevant articles.

The articles were then sorted by their relevance by reading through their abstract. The search was primarily focused on scientific articles published in journals or books to gather valid articles. The relevant articles were then read, and findings were documented. From the findings, a tentative framework of internal ideation can be formed. This framework includes the most relevant factors for creating a well-functional internal idea generation at a company and are based on the literature.

3.4. Data collection

In parallel with the literature study, the researchers performed an introductory study at the company in question. To get a deeper understanding of how the company is currently working with innovation. The interviews were unstructured due to the little knowledge of how the company had worked with innovation before, which made it impossible to structure questions about the process beforehand. These interviews were also not recorded. Instead, notes were taken for later review and transcription. These interviews were preliminary with members of the innovation group, a newly formed group to increase the company's innovation level. The interviews provided an understanding of the company's overall structure and the innovation group's daily activity. Additionally, giving the researchers a practical view of how the company was working now.

External

In order to answer the research question as well as adding to the theoretical framework, qualitative data were collected. The collection was done with semi-structured interviews with the earlier mentioned external companies. The use of semi-structured interviews was used to be flexible and adapt depending on the interviewee's answer (Rowley, 2012). This also supported more of a discussion about the subject with the interviewees. The interview guide was developed to investigate the tentative framework and to create a discussion around the topic to reveal other factors for internal ideation processes.

The previously mentioned six companies were interviewed. Each of which has a connection to an idea management system. Three of the companies have implemented an idea management system that they are using to increase their innovation level. The other three are firms that are designing an idea management system for other companies. The interviews with external companies were around one hour long and were conducted online. All the interviews were audio-recorded to let the interviewer focus only on the interview itself. The recordings were then transcribed for later analysis.

Internal

Interviews were held with employees to investigate potential improvements for the case company. The interviewees were divided into two groups, one for the people managing the idea management system and one for regular employees. The group consisting of the management team included four employees. These four were dedicated to the task of structuring the process surrounding the idea management system. The regular employees were chosen in collaboration with the researcher's supervisor at the company and by random. This includes personnel that had been recognized as innovators by the supervisor and to include the general regular employee. The size of the regular employee group was 16 persons with ranging positions from higher managers to employees on entry-level positions.

Two separate interview guides were developed to conduct internal interviews. Both interview guides were composed of a combination of open and semi-structured questions. This method was used to understand how the employees perceived different factors and how they are structured today. Moreover, the structured questions about the interviewee, such as age, time at the company, and position in the firm, made it possible to compare the different views between the interviewees. All interviews started with an introduction of the research study and an introduction of the employee. The next section handled the interviewee's innovation contribution and their perspective on the current process. After that, came a section of how they perceived the company related to its innovation activities. In the last section, the idea management system was discussed. For the group that manages the idea management system, an additional section was added. This section was aiming to provide an understanding of how the managers of the program had structured and were working with it.

The internal interviews were all conducted online, and audio recorded. One interview was approximately 30 minutes long. The interview recordings were later transcribed for the analysis.

Questionnaire

The quantitative part of this project was conducted using a questionnaire. The questionnaire aimed to investigate the identified ideation factors to the innovation output as well as estimate how well Bengt Dahlgren is incorporating the factors at the moment.

The questionnaire begun with control questions to be able to differ between the respondents. These questions regarded the respondent's age and sex and how long they have been employed at Bengt Dahlgren. Three questions focused on determining how creative of a person the respondent was. There was a set of questions after the initial control questions for determining the innovation output at Bengt Dahlgren. These questions regarded the five output factors found in the framework. After the output questions, each factor from the framework was investigated. Each factor was assigned three questions measured on a five-point Likert scale on level of agreement.

The questions were developed both from existing questions from previous studies and in collaboration with the supervisor. The existing questions were translated from English to Swedish and originated in studies made from Frese et al. (1999) and Kock et al. (2014). This to provide questions that had already been developed and validated.

Moreover, the questionnaire was created using Google Form and conducted online. The distribution was made through email, and the questionnaire was sent to all employees on Bengt Dahlgren Stockholm AB. Two reminders were sent with an interval of one week to ensure as many answers as possible.

3.5. Data analysis

Interviews

Two different methods were performed to analyse the data gathered from the interviews: within-case and cross-case analysis. The within-case analysis was performed to identify each case individually, and then the cross-case analysis was used to investigate similarities between the different cases. The within-case analysis will help sort the amount of data gathered in a case study and make it practical for analysis. Where the cross-case analysis will ensure a more reliable result through research beyond initial impressions. (Eisenhardt, 1989). In order to perform the two techniques, the transcribed interviews were coded using the software NVivo. The software made it possible to structure the analysis in a better way.

First, external interviews were analysed. These were coded according to four principles that were decided by the research group in advance:

1. If the data were related to the research question.
2. If the data were related to the previously developed framework.
3. If the data provided new knowledge that was interesting and had a connection to principles 1 or 2.
4. If the data were related to practical methods or practices for handling internal ideation.

The identified codes were then aggregated into different second-order themes depending on what the code referred to (Gioia et al., 2012). This was done for each interview and provided the base for the cross-case analysis.

The cross-case analysis proceeded with the identified categories from each case to investigate similarities and differences to each category. The categories were divided between how much they were mentioned and by the number of interviews they in.

All the transcripts were coded separately by both researchers to elevate the objectivity of the data. These were then compared through an analysis where all the relevant factors were discussed. All factors mentioned by both researchers proceeded to further development of the tentative framework. Any ambiguity that was found between the two researchers were discussed and resolved. This analysis resulted in further developments of the tentative framework. To increase the understanding and verify the already reviewed factors.

The same method was used with minor alterations to analyse the data from internal interviews. Firstly, a case analysis was performed to identify each case, and then a cross-case was performed to find similarities between the different cases. To structure the analysis, the software NVivo was used. The data from internal interviews were coded according to the same four principles that were used for the external interviews. The only difference between the external and internal interview analyses was that the data from the internal interviews were coded in an explanatory way in order to relate the interviews to the framework.

Questionnaire

The data from the questionnaire was first analysed descriptively. This was done using graphs and diagrams for the answers in order to investigate the employees' view of their innovation performance and capability.

To further investigate the questionnaire, a linear regression analysis was performed. This analysis was done in IBM SPSS statistics data editor.

The first step in the analysis of the questionnaire was to define the reliability of the items in question. This was done using a reliability test in SPSS to calculate each item's Cronbach Alpha. This is important to decrease the risk of misinterpretation of the questions. An adequate level of Cronbach's Alpha to ensure a reliable response is 0.6 (Schmitt, 1996). If the item received a Cronbach's Alpha lower than 0.6, it was not included in the regression analysis. When Cronbach's Alpha had been determined, an index for each ideation factor was created. Each index included all questions related to measuring one specific item. Before the regression analysis was performed, a correlation analysis was conducted. This was done to control the correlation between the different factors.

The regression analysis was performed in three steps:

- Step 1: Investigate the interrelationship between the control variables and the dependent variable.
- Step 2: Investigate the interrelationship between the control variables together with the ideation factors and the dependent variable

For test two and test three, a third step was included to investigate the earlier variable's mediating factor.

- Step 3: Investigate the interrelationship between the control variables, the ideation factors, and a moderating variable.

The regression analysis was conducted on the dependent variables, *Culture*, *Ideation Effort*, and *Quantity of submitted ideas*. The analysis aimed to find the interrelationships of the factors together with their influence on innovation performance.

3.6. Method discussion

It was tested against four criteria to validate this thesis research. The four criteria are proposed by Yin (2017) and consist of: Construct validity, Internal validity, External validity, and Reliability. Yin (2017) also explains different tactics to test each criterion, presented in Table 3.

Table 3: Criteria and tactics adapted from Yin (2017)

Test	Case Study Tactic
Construct validity	Multiple sources of evidence
	Establish a chain of evidence
	Key informants reviewing the draft
Internal validity	Do pattern matching
	Explanation building
	Address rival explanations
	Use logic models
External validity	Use theory in single case studies
	Use replication logic in multiple cases studies
Reliability	Use a case study protocol
	Develop a case study database

In this thesis, both qualitative data in the form of interviews and quantitative data from a questionnaire were used. This provides the study with multiple sources, which increases the construct validity, according to Yin (2017). Creating a chain of evidence by first performing a literature study and then conducting research at the company is also evident to strengthen the construct validity. Key informants also helped by reviewing drafts of the report.

Internal validity is important for an explanatory study, according to Yin (2017). Due to this thesis being an exploratory study, no specific tactic for the internal validity was used.

The external interviews that confirmed the theoretical findings increase the external validity in this study. Providing a high external validity for the theoretical framework. However, due to the rest of the study being performed within one company. The external validity is rated low due to the difficulty of generalizing the result in a broader context.

Reliability was achieved by using both tactics provided by Yin (2017). A database was created where all recordings, transcripts, and other documents were organized and stored. Furthermore, the methodology section in this report explains the process in detail.

Further precautions to increase the objectivity were made by having both researchers performing individual coding of interviews. The coding was then combined and analysed together.

A problem that is needed to address is the language barrier. Out of the 26 interviews, only two were performed in English. The other 24 were in Swedish. This made the problem of translating quotes. The translation was performed together as both researchers are fluent in both languages, decreasing the risk of misinterpreting the quotes.

Furthermore, one problematic area of the study was the timing of the interviews due to the external interviews not being completely analysed by the time of the internal interviews. As the external interviews provide a redefined framework, some factors were not explicitly asked about in the internal interviews.

4. Redefining the framework

In this chapter, the previously structured tentative framework is redefined. The new definition of the framework is building on information from the external interviews, as described earlier. First, this chapter presents the result from the external interviews. After that, a detailed explanation of the new framework is presented.

4.1. External Interviews

Interviews conducted with external firms complement and verify the tentative framework. The interviews target firms with an idea management system or firms that develop and design idea management systems for other companies. In total, there were six companies interviewed, three of each type. Company A, B, and C design and develop idea management systems, and Company D, E, and F use an idea management system at their firms. The interview guide for the external interviews is presented in Appendix A.

At the beginning of each interview, the interviewee explains how to best work with an idea management system to enhance the innovation capability. The three interviews with the companies using an idea management system they explain how they are working with innovation. The interviewees' answers are quite broad for this topic summarized by a quote from Company B:

“There is no silver bullet, no single answer, no recipe for being successful with innovation management.”

-Company B

When looking at the answers of Company D, E, and F. Whom, all explain their way of working, which indeed is completely different from each other, complement this theory. However, there are somewhat similar aspects of working with innovation, even though the companies explain them in different ways.

Culture

All interviewees agree that managing internal innovation is different from company to company; they all mention the company culture and how it influences the innovation landscape at a company. This concept was not explicitly asked about in the interview guide but instead explained by the interviewees when speaking about improving the innovation phase. As Company B explains:

“It is basically a chicken and egg problem, what came first. Is it the company culture that supports innovation, or is it the establishment of innovation practices that then helps change the company culture?”

-Company B

Clear Vision

All six interviewees bring up strategic goals and visions for innovation. With this, they mean the way a company structures its strategic vision to lead the innovation work. Otherwise, it is highly likely that the ideas will not lead to valuable innovations. It is highlighting the fact that

it is challenging to invest resources into a project that is not aligned with the company's strategic vision.

"The strategy, on the other hand, a formal decision and something that is steered by the company and if there is no alignment between the strategy and the innovative work. It will most likely lead to a huge waste of time and no development of something that the company can invest in anyhow."

-Company B

Some of the interviewees also suggest that only having innovation work on the agenda could be enough for the company to think creatively about innovation.

The use of focus areas or campaigns are discussed in all interviews and there is a consensus that a company needs to use idea generation campaigns. As Company A says:

"When you ask the right question, you get the right ideas."

-Company A

All six companies mention this as an essential cornerstone of their innovation process. There is a need to direct the idea generation to a specific area to get ideas that will be valuable for the company. However, an idea campaign can be branded in different ways. One approach Company B explains is to use the wisdom of the participants to figure out what is the most significant issue that the company should be solving at the time. It can also start from the point where the management has identified a problem and then searched for solutions from that point.

The opinion of having a time limit on the idea campaign is divided, where four of the interviewees are positive towards using time limitations. By running an idea campaign for a couple of months to evaluate all the input ideas and decide which one is the best. The two other interviewees do not mention time limitations as something negative instead, when they are being asked about the subject of campaigns, they say that they do not use it because there is no need for it. However, Company F say that they are inclined to try using time limitations in the future.

Communication

All interviewees highlight the fact that communication is an especially important subject for innovation. The communication is crucial to inform the employees of what is happening related to innovation at the company. It will also play a role in sharing ideas and building on ideas to improve them.

"You can collect in email, excel, etc. the most important thing is to talk to employees and communicate."

-Company A

Communication is a tool for management to provide feedback for the employees that suggest new ideas. To inform them what has happened to their idea. This is explained to enhance the motivation for some employees, even if the management says no to the idea. The interviewees agree on this point, and all of them say that feedback is essential.

"It will quickly communicate to people that it is not worthwhile to submit ideas. Then, I think you lose all commitment. You should give feedback. To show that no matter what you come up with, we appreciate it."

-Company C

Furthermore, communication is mentioned to contribute to another important aspect as well, knowledge sharing. This is made by the possibility of commenting on other people's ideas. All the interviews see knowledge sharing as something highly desirable. Company D, E, and F were explaining how they worked to achieve as much knowledge sharing as possible. They are promoting employees to comment on ideas, and in some cases, even asking certain persons to comment on ideas. The reason for this seems to be that comments will enhance the ideation and build an even better idea, which is in line with Zuchowski et al. (2016) research regarding the iterative ideation process. Explaining that an idea can become better by iterative enhancing through commenting.

Access to information

Communication is also discussed as the main tool to provide transparency regarding the innovation process.

“The key could be that companies make sure that everyone in the company actually dares and can submit ideas. Because there is transparency for the knowledge about these ideas that you want to distribute and that it can be communicated so that everyone can benefit.”

-Company C

By the mean of communication, the firm can provide the employees with a level of transparency, so they understand the innovation process. Company D, E, and F talk about the importance of communicating what happened with their employees' ideas. To show them that submitting an idea will lead to something but also to show the progress of the process.

Transparency is discussed as something that would heighten the level of motivation and make employees submit an overall higher quality of ideas. Furthermore, Company F explain presenting this transparency of the process gets easier using an idea management system to gather the process at one place in the company. Companies D and E are also positive about using one platform as an interaction arena.

Resources

When discussing potential pitfalls for companies where they can fail in their innovation process, five interviewees bring up one specific area. That area is resource allocation and the most notable time allocation. Financial resources are also mentioned but not to the same extent. As Company B explains:

“It is never the case that a company has nothing to do and can establish an ideation process in order to finally get something to work on, it is rather that they are already busy with other work.”

-Company B

This shows that it is crucial for a company that is trying to be innovative internally to allocate the right resources for the employees. Because if the employees are busy with their regular work, there is no time to be innovative. Company E further argue that if they want to increase the innovation level at their company, they will need to hire employees that can work only with innovation. Instead of a couple of employees working with it part-time, as they have right now.

Responsibility

Furthermore, when discussing pitfalls for companies, the subject of responsibility is discussed. All six interviewees mention responsibility as an important thing to consider when working with innovation. If no responsibility is delegated, innovation activities tend to be deprioritized, as they are not part of the company's core business. However, what sort of responsibilities and what one person would be responsible for differs between the different interviewees. For example, Company F argues that there must be someone responsible for pushing the idea forward and committing to the idea. As well as someone responsible for the different campaigns they have:

“We previously experienced that it was difficult to push ideas through our idea management system when there was responsibility for categories, but no one else took responsibility to help drive the ideas. What we have done now is that we have remodelled the organization so that more people in each category are responsible for pushing ideas.”

-Company F

Another kind of responsibility, as refers by Company A, who argues that there is a responsibility for owning ideas and knowing what they want with the idea. There is not only a person who wants to push the idea forward but who knows what they want from it. This kind of responsibility can be a customer for the company or an employee at the company. However, someone needs to have the responsibility in order to produce a valuable change for a company.

“Do you have somebody who is going to take responsibility and somebody who knows what they want? Do you have a customer?”

-Company A

Motivation

When it comes to motivating employees for innovation, there are some contractionary statements. Company A believes that there are different employees; actively engage, engage, and disengaged. Of which a company does not need to motivate the actively engage due to them already being motivated. Instead, they should focus on mowing the engage employees to engage actively. For the disengaged employees, the company should not bother because they will not become motivated. On the other side Company B argue that the worst thing a company can do is not motivating the employees. By saying that companies believe if they just set up the system, so employees have somewhere to document their ideas, the system will work by itself. Company B later explains that there is no one way of motivating employees. A company needs to find what works for them.

Both Company C and F argue that the most efficient way of motivating their employees is to show them the progress, to show that there is happening something with the ideas they give. This can be done by presenting articles in the company's intranet or presenting the ideas on screen in the office, as Company F explains:

“I have worked with other companies that have been good at setting up such an idea box, but they never did anything with those ideas. This makes people at these companies quickly realize that it is not worthwhile to contribute.”

-Company C

How to motivate employees may differ from company to company. However, motivating through only monetary rewards are evident not to yield a strong response. Although being an attractive motivating incentive, it shows to improve motivation by little. Company C even rejects monetary rewards due to them see it attract the wrong kind of people. People who only want the reward send in many ideas, but their quality decrease, and no one would be driven to turn the idea into something useful. However, Company B argues that monetary rewards may have a place in the motivational aspect and that companies can benefit from using them. This to increase extrinsic motivation, which motivates some people more than others. Other people can be motivated by a more intrinsic reward, such as recognition and feeling self-accomplishment. Company B argues for using a mixture of both motivational techniques.

If people feel that innovation is an informal part of their regular work, it can channel motivation better. That innovation is a responsibility to help the organization to develop and through that help their career to develop. If they feel innovation as a component to help in that area, it can usually build motivation that will last in the long term. The motivation does not just appear but needs to be enhanced and developed, mainly through communication. The management needs to make everything clear for their employees and communicate their impact to show that something happens with their ideas.

Outcome

In terms of ideation outcome, there are different sides to this, none better than the other. It all depends on what the company wants and how they are asking for ideas. If they are asking for higher-quality ideas that the employees need to formulate in more detail, they will get higher quality ideas. Whereas if they want a higher quantity of ideas, they can make it easier to apply ideas but will lose quality. The result is that a company will get what they are asking for, so the critical step is to formulate the question right.

When discussing radical versus incremental innovation, there are divided options. One interviewee says an innovation manager should focus on incremental ideas to be able to pay for the more radical ideas. The incremental ideas are often quicker and easier to implement, while radical ideas take more time and investment. In contrast, another interviewee argues that it is the incremental ideas that build radical ones in the long term, by improving a product to the extent of offering a completely new one.

The view of which ideas to ask for connects back to the company strategy. The strategy needs to guide innovation in some way because if it does not, it is likely that the idea will not get funding. If a company asks for ideas that are in line with their long-term strategy, there becomes a reason to invest time into them otherwise there is a risk of losing out.

4.2. The new framework

Identified new factors that influence a company's internal ideation are summarized in Table 4 down below. These factors are evident from the external interviews' aggregated codes and incorporated into the tentative framework. Trough the codes formerly defined factors are identified and confirmed.

Table 4: Summary of external interview result

Factor	Description
Responsibility	In order to secure an innovation process, responsibilities need to be delegated.
Resources	A company needs to allocate resources for innovation, especially time.
Communication	Communication is critical for feedback and knowledge sharing among the employees.
Interaction arena	It is beneficial to gather innovative work in one place.
Culture	A company needs to have an innovative culture.

The empirical findings from the interviews indicate that the tentative framework needs to be altered. Although factors from the literature are confirmed in the interviews, the composition of the framework can be rearranged to fit better with the realistic view of the ideation phase.

There are new factors that the previous literature had not fully confirmed. Leading to a redefined framework, which includes the new factors as well as the old. The new framework can be seen in Figure 2. The framework is divided by Governance, Internal Ideation and Outcome and Drivers. This division represents the different parts involved in ideation. These different parts influence each other as well as the result of the whole internal ideation system. Governance refers to factors that are linked to the management of the company to set up. These factors should be discussed by the management before the internal ideation process get realized. Depending on how the factors are established, it affects the internal ideation process. The factors of internal ideation refer to the employee's perspective. These factors matter most during the internal ideation process. The Outcome is different type of output from the internal ideation process. The factors of Outcome should be discussed by the management since the process of the internal ideation affects the type of Outcome. Drivers are factors that drive the internal ideation forwards. The reason factors of Drivers are pictured in the centre in the framework is due to the multiple sides of the factors as they will perform in a continuous loop where they build upon each iteration. These factors provide an output for innovation in order to motivate continuous ideation and building on a culture. As Company B says, "It is basically a chicken and egg problem, what came first.". A company needs a culture that is allowing innovation to happen. However, the company is building that culture through being innovative. Additionally, the factors of Drivers must be discussed by the management since they decide how to drive the internal ideation.

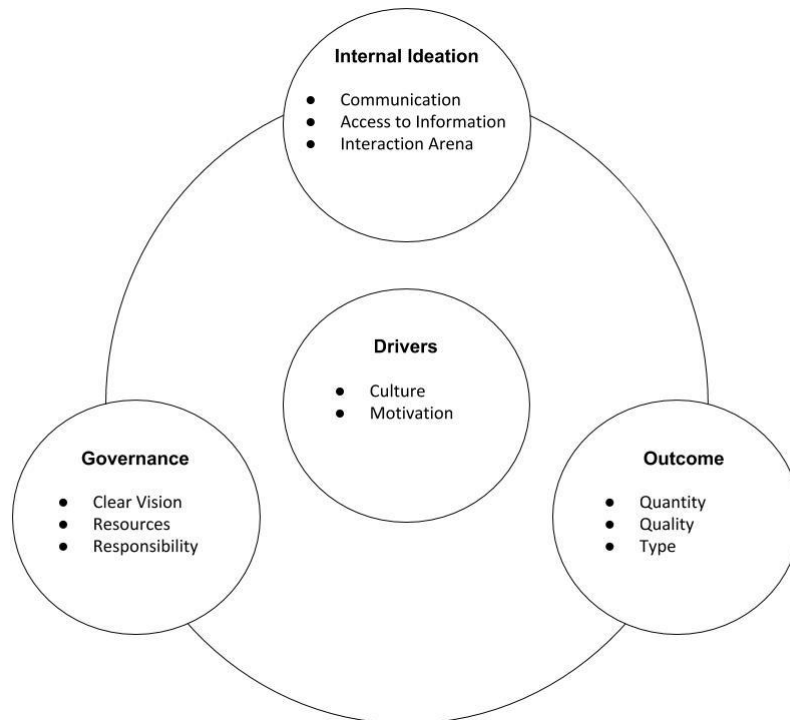


Figure 2: Redefined framework for internal ideation

Governance

Clear Vision

Clear Vision refers to the company's way of introducing a common strategic goal of their innovation activities. To provide employees with the knowledge for what they want to get from the ideation process. Within Clear Vision will also the focus areas be developed to align with the company's strategy.

When determining the focus area, most interviewees suggests going back to the strategic goal of the company. If the focus is aligned with the company's strategy, it is much easier to invest in and to realize. They also suggest that the best approach is to find a problem. Then a company can define that problem by discussing, for who it is a problem, and why it is a problem. When the problem is well defined, it can be made into a focus area and distributed to the employees.

Resources

Vukovic (2009) found that resources and requirements for innovation projects needs to be set to prevent waste. This is also shown through the interviews, Resources is mentioned by all interviewees as a problem area, specifically time limitations. Since employees will be working on their work assignments on the regular time, there may not be much time over for innovative activities. This problem needs to be handled. Either through including innovation activities into the regular work schedule or to provide slack time to do it. Money is also a valuable resource to allocate correctly. To provide a budget for the early stage of innovation is difficult due to the uncertainty of the innovation's potential success. A company will nevertheless have to allocate a budget for the FEI in order to be able to realize innovations.

Responsibility

The factor of responsibility is found too important to govern when working with ideation as the interviews present it as a problem that innovation activities get down priorities. Demonstrating that companies need to delegate responsibilities in order to secure the innovation process at the company. Four different roles of responsibility are founded: *Coach*, *Customer*, *Category*, and *Driver*. Each role, referring to a different area of responsibility. All four roles should have a responsible person behind it to accomplish proper structured innovation management. Otherwise, there is a risk of failing.

1. Coach – Refers to a person that is there to motivate innovation activities. Their main objective is to activate the employees to generate more ideas and constantly promote innovation.
2. Customer – Refers to the person whom the innovation is made for. It can be the customer for the company or an internal customer. This person answers the question of why the innovation matters.
3. Category – For each category in the innovation process, a responsible person needs to be delegated. This person is responsible for creating and formalizing the focus area and making sure the ideas get to the right person.
4. Driver – Refers to the person who is responsible for driving the idea forward.

Internal ideation

Access to Information

In line with Boeddrich (2004), transparency is presented as important for the innovation process. Employees need to know what is going on in the internal ideation phases otherwise, there is a risk of it becoming a "black hole" where nothing comes out. Without showing the progress of different ideas or providing feedback for submitted ideas, motivation will decrease, and eventually, no employees will submit any ideas. Having a transparent process can also increase the quality of the submitted ideas. If employees know what kind of ideas management wants, it will be easier for them to adjust their new ideas after that.

Communication

The primary tool for providing transparency is communication. Which subsequently is highlighted as an essential aspect of ideation. Communication is important both between management and employee, but also between employees. Mainly for the possibility to provide feedback on ideas as well as the possibility for knowledge sharing. Feedback is essential to encourage employees to submit ideas and to show the progress of their ideas. Even though it would be decided not to implement an idea, feedback would still be important to explain why. Because if that reason changes, that idea can be revisited.

Interaction Arena

Furthermore, Company A, B, and C identify that using an idea management system has a positive influence on a company's ideation through gathering the innovation work on one platform. In their words, this makes it possible to show the work for all employees, which in turn realizes the knowledge sharing and transparency of the process. Company D, E, and F confirm this, recognizing that gathering all the ideas in one place creates a needed overall view

of the innovation process. This can make the process of evaluating and working with ideas more accessible and structured.

Innovation Drivers

Culture

All the interviews discussed company culture and that it influences the innovation capability. However, they are not aligned in how it affects the capability but instead discussed the importance of having an open mind where employees want to contribute to innovative projects and try new things. All interviewees are on the same track that a company needs to have an innovative culture where employees feel that they can make a difference and that their ideas matter in order to be successful with internal innovation. One interviewee even explains that if they recognize that a company do not have an innovative culture, they know that it will be difficult to integrate their idea management system at the company. They further recommend that in order to establish an innovative culture, a company should start with small and easily implemented ideas to show progress to the employees.

Motivation

Motivation is an important factor when solving the problem with internal ideation. Although there are contradictions between the interviews, motivation is needed. However, how the motivation is formed and managed will differ depending on the company as there is no silver bullet. The primary outcome of the discussion will be that a company needs to try different approaches for motivation to find what suits them. Even though there is an argument for not motivating employees, the results show that it is a weak argument and more significant benefits can be gained by setting up motivational processes.

Monetary rewards are presented to be the least efficient way to increase motivation, which is in line with the previous study by Fairbank & Williams (2001). However, there are also arguments for implementing monetary rewards to enhance extrinsic motivation. As long as it is not the only source of motivation, but instead a mixture with the roots in intrinsic motivation, there seem to be no drawbacks of using them. As Zuchowski et al. (2016) research indicate, recognition can also be an incentive to increase employee motivation. Recognition, on the other hand, serves a more intrinsic motivation and would be an example of integrating the two sorts.

If it is possible to link the employees' regular work to internal innovation, it is shown to increase motivation. It will further increase a feeling of responsibility in the employee for the company's future and build on an inner community in the company. If an employee sees it as beneficial to themselves to be innovative, they will be more inclined to be it. A company's innovative community has been shown by previous studies (Zuchowski et al., 2016; Dahlander, Magnusson, 2008) as well as from the interviews.

Outcome

The outcome perspective is divided by quantity, quality, and type, which refers to the different kinds of innovation outputs. It was suggested that companies take on quantity and quality differ. Either a company wants many ideas, which lower the quality, or they can strive for higher quality, which decrease the quantity. Here it is no real practical reason for what the companies should want. It is a matter of how they have set up their innovation process. One argues that striving for a higher quantity of ideas can require a higher investment in the innovation back

end because it takes more resources to work with the ideas before it is worth investing for implementation. However, by increasing the quantity of the submitted ideas, the quality can likely decrease. Revealing that there is an argument for a high threshold to submit ideas. This can most likely increase the quality of submitted ideas and it can take a more actively engaged employee to invest the time to formulate the idea.

From the interviews, it was suggested that a company should strive for a balance between both incremental and radical ideas. This will be up to risk strategy since radical ideas have a high uncertainty of success. This will demand innovation managers with high skill of creating their innovation portfolio.

5. Result and analysis

The following result and analysis are referring to the single case study conducted at Bengt Dahlgren. Below is the result of the quantitative survey and its regression analysis are presented. Follow by the result from the internal interviews. Lastly, the similarities between the two data analyses are displayed.

5.1. Result and analysis of quantitative data

This section presents the qualitative data from the questionnaire. The main findings will first be presented descriptively. It will be presented in chronological order from the questionnaire, as shown in Appendix C. Then a regression analysis and its result are presented.

A total of 160 employees received the questionnaire through email. After the initial email, the researcher sent two reminders to answer the questionnaire. The reminders had a week between them in order to receive as many responses as possible. It resulted in 70 responses, which created a response rate of 44%. The survey was only sent to employees at Bengt Dahlgren's office in Stockholm and is in Swedish.

Quantity of submitted ideas

To understand the company's level of innovativeness, each respondent had to answer how many ideas they had submitted under the last year. The answers vary from zero ideas per person to one who submitted a total of 30 ideas. Illustrated in Figure 3, is the percentage of each group. In the chart, responses for six or more ideas have been gathered into one group, due to each person in that group submitting a separate number.

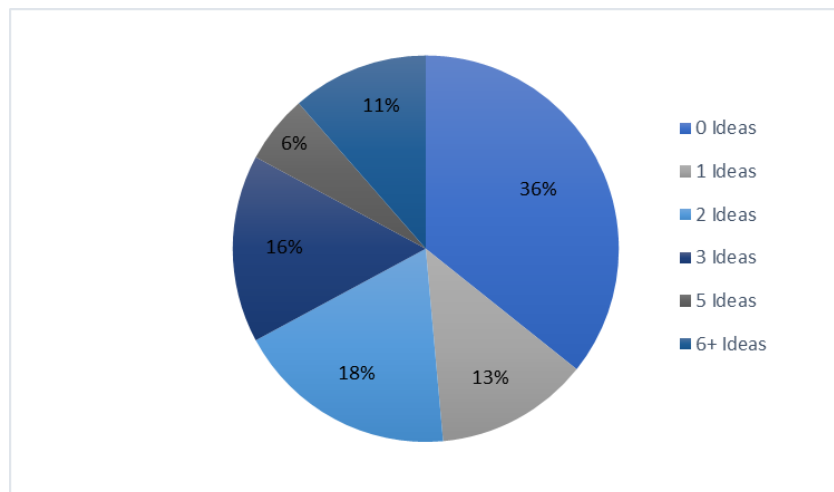


Figure 3: Number of submitted ideas in the last year for each respondent.

The majority of the respondents said they had not submitted an idea during the last year (36%). Four is not included in the chart since no respondent said they had submitted four ideas. The group of 6+ Ideas had responses between 10 and 30 ideas. However, in the 6+ group, each answer only corresponded with one respondent. In total, there had been 220 submitted ideas by the 70 respondents. However, eight individuals stand for 130 (60%) of the ideas.

Out of the 64% that had submitted an idea during the last year, a total of 18% said that all their submitted ideas got implemented in the company, and 34% answered that none of their ideas got implemented. Plotted in Figure 4 is the number of submitted ideas and the number of realized ideas. The relationship between submitted ideas and realized ideas is above 50%, which means that more than 50% of all submitted ideas got implemented.

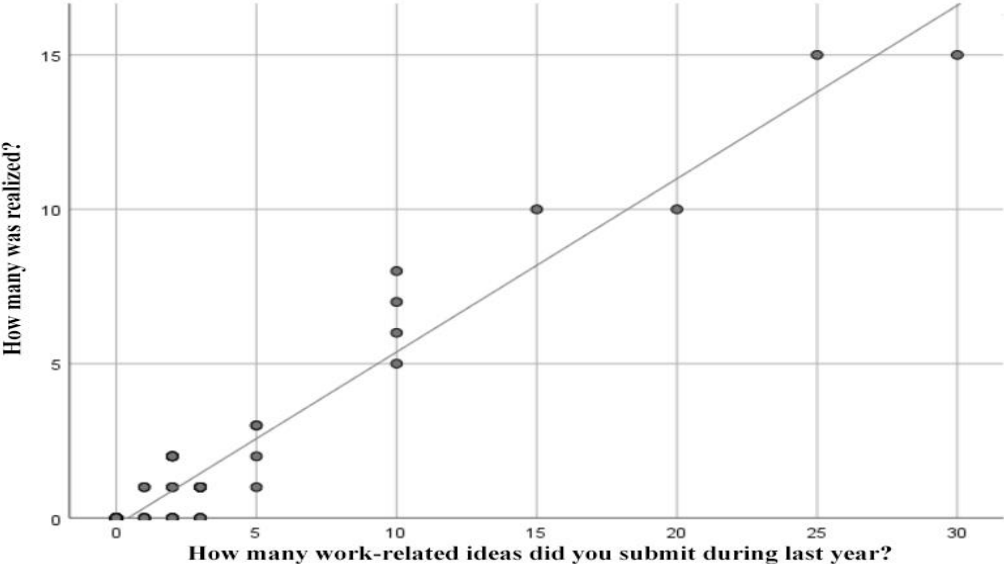


Figure 4: Submitted ideas plotted against realized ideas

Ideation Effort

The ideation effort was measured by how much time a respondent allocated to an idea before submitting it. This aspect was measured using three questions with a five-point Likert scale. The mean value for the ideation effort factor was 3. Figure 5 indicates that respondents take a moderate approach to dedicate time to ideate. Notable is that employees tend to agree more with the question "I think a lot about solutions to work-related problems," than the questions more distinctively mentioning time consumption.

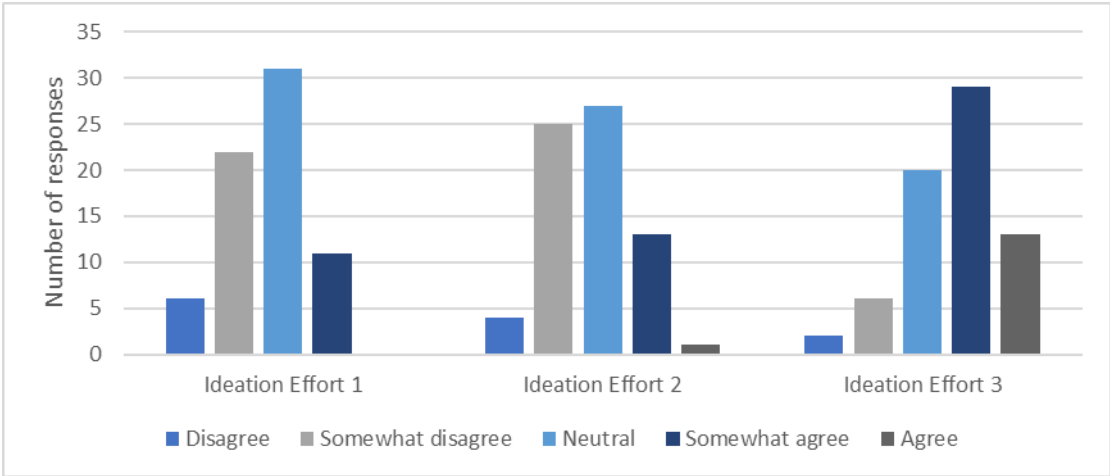


Figure 5: Respondents answers for Ideation Effort questions

Culture

The innovative culture was measured using eight questions. The high amount of questions for this variable is due to the many faces of a company's culture. The measurement questions for this variable varies from how other employees' innovativeness influenced the employees to how encouraged they got by their managers to be innovative. As seen in Figure 6, the employees agree that the culture is enabling innovativeness. Questions 1, 2, and 6 had no respondent answers with disagreeing. The mean score of all the questions is close to 4, which stands for somewhat agree. This result indicates that employees believe the company's culture is enabling innovation.

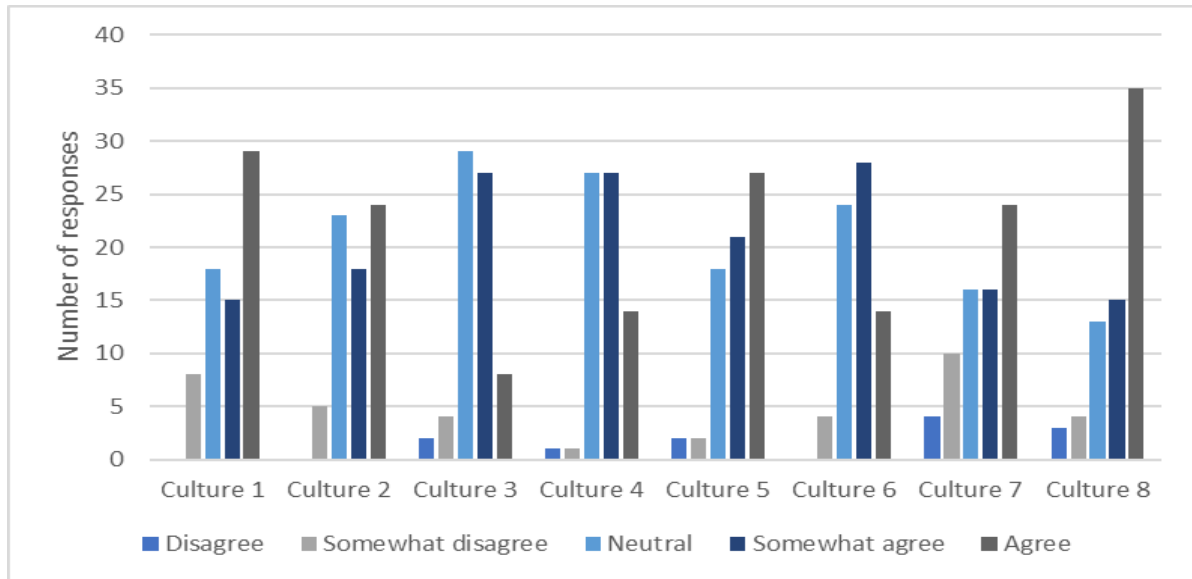


Figure 6: Responses relating to Culture

Type of ideas

Investigating the types of ideas respondents submit, there is a difference between the more incremental ideas (Improve existing offers, Improve work processes) and the more disruptive ideas (New business opportunities). See Figure 7. The respondents agree to a higher amount that their submitted ideas related to incremental changes, whereas there is a lower agreement level with submitting ideas for new business opportunities.

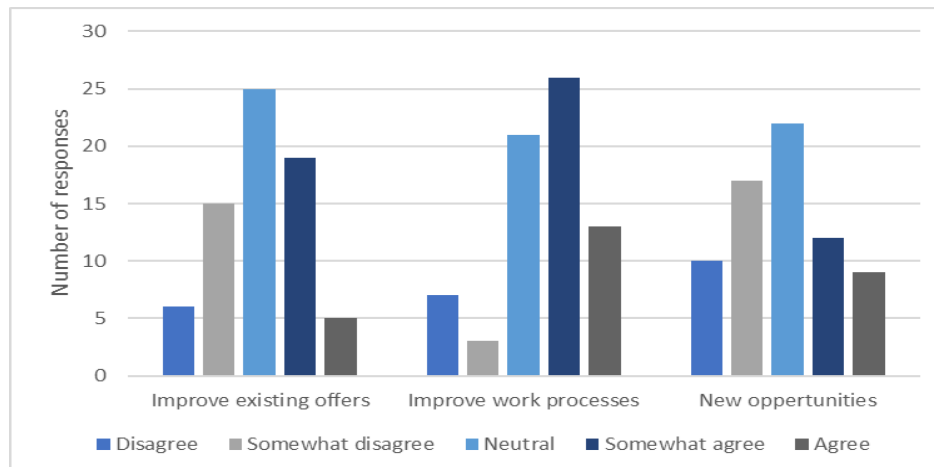


Figure 7: Agreement level for type of submitted ideas

Ideation Factors

Ideation factors measured in the questionnaire were: Clear Vision, Resources, Responsibility, Access to Information, Feedback, Interaction Arena, and Incentives. In total, this makes seven different factors relating to different factors in the earlier mentioned ideation framework.

The mean value of the responses to the different ideation factors is presented in Figure 8. Clear Vision is the factor that respondents ranked highest with a mean value of 3.47. Resources are the lowest-ranked factor, with 2.61 as the mean value.

The high mean score on Clear Vision indicates that the company has a vision of what they want with their innovation work, and the employees understand that vision.

The low score on the factor of resources indicates that the company does not provide enough time and money for innovative activities. In the research by Rietzschel, Nijstad, and Stroebe (2010), they argue that allocating resources for innovation is essential for innovation performance. This result shows that the company needs to focus on their innovation activities to increase their innovation ability. In Appendix D, all the ideation factors independent answers are presented in more detail.

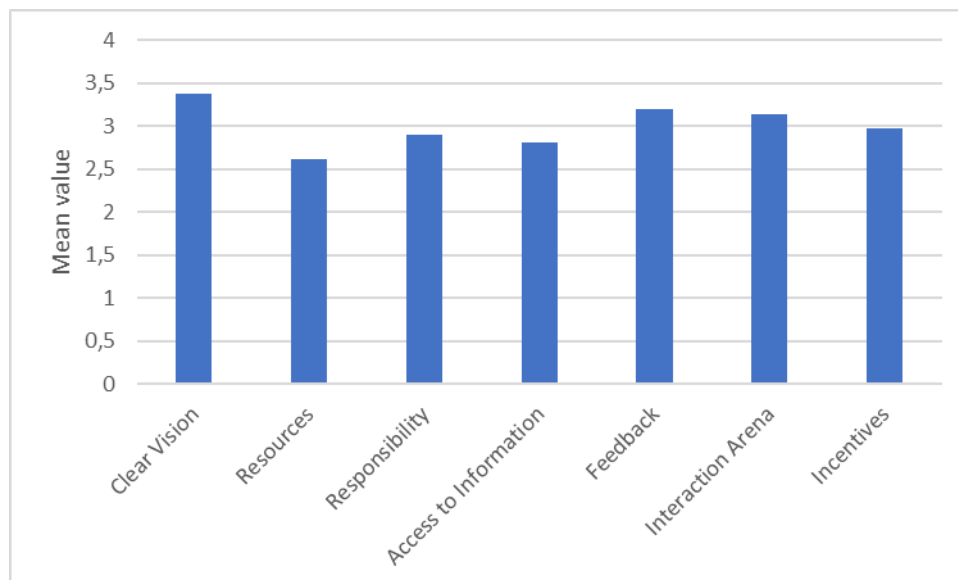


Figure 8: Mean value of Ideation Factors

5.2. Regression analysis

A linear regression analysis was performed to investigate the questionnaire further. This analysis strived to investigate the interrelations between the ideation output and the previously found ideation factors. This analysis had the aim to answer the research question: *What are the interrelationships between the ideation factors and the ideation output?*

The ideation output was divided into three categories; Culture, Ideation Effort, and Quantity of submitted ideas. This made it possible to specify interrelations between different output areas and ideation factors. The reason for not using the five listed outcomes, Quantity, Quality, Type, Motivation, and Culture, from the framework, is due to the difficulty of measuring them. However, Motivation is closely related to the factor of Culture and Ideation Effort involves the time allocated to an idea before submission, which is one measurement for idea quality.

It was also noted through the analysis that Culture is mediating ideation effort, and both are mediating the quantity. Three tests were conducted to analyse the data. The first test investigated the ideation factors impact on the variable Culture. The second test investigates the impact of ideation factors on Ideation Effort and the Culture as a mediator for Ideation Effort. The last test investigated the ideation factors impact on the quantity of submitted ideas where both Culture and Ideation Effort were mediators. The description of the three tests can be seen in Table 5.

Table 5: Variables used for the three tests

Test 1			
Control	Independent	Dependent	
Gender	Clear Vision	Culture	
Age	Resources		
Time at company	Responsibility		
	Access to Information		
	Incentives		
	Feedback		
	Interaction Arena		
Test2			
Control	Independent	Mediator	Dependent
Gender	Clear Vision	Culture	Ideation Effort
Age	Resources		
Time at company	Responsibility		
	Access to Information		
	Incentives		
	Feedback		
	Interaction Arena		
Test 3			
Control	Independent	Mediator	Dependent
Gender	Clear Vision	Ideation Effort	Quantity of submitted ideas
Age	Resources	Culture	
Time at company	Responsibility		
	Access to Information		
	Incentives		
	Feedback		
	Interaction Arena		

Cronbach's Alpha

The result of the reliability test, through measuring each items Cronbach's Alpha can be seen in Table 6. As seen in the table all factors and variables are above the prescribed limit of an alpha 0.6. This makes all of them suitable for the regression analysis.

Table 6: Cronbach's alpha for each variable

Variable	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of items
Clear Vision	.757	.757	2
Resources	.769	.768	3
Responsibility	.829	.835	3
Incentives	.686	.683	3
Access to Information	.798	.798	3
Feedback	.824	.825	3
Interaction Arena	.663	.663	2
Culture	.842	.848	8
Ideation Effort	.649	.655	3

Correlation analysis

A correlation analysis was conducted to investigate the correlation and causation of the measurements in the questionnaire, see Appendix F. The correlation analysis presents that the three factors, Clear Vision, Resources and Responsibility, all have strong relationships with the other ideation factors. This correlation indicates that the three factors are rather important for the ideation at a company. However, it also indicates that the questions for these factors may measure similar subjects.

Moreover, the factor Incentives does not correlate strongly with any other ideation factor. Indicating that it measures something significantly different than the other factors. This can be since the company the survey was conducted does not work with incentives. Feedback and Interaction Arena also has a low correlation with the other factors.

Test 1 – Culture

The first test conducted was the ideation factors impact on the dependent variable culture. This test was performed through two models, first only with the control variables and then including the ideation factors. The adjusted R² value changes from 0.183 to 0,624 between the two models, see Table 7. Indicating that the ideation factors can explain the variance in culture with 0,441, which can be considered as a strong value. From the ANOVA table, found in Appendix E, both models are significant for the regression analysis. The coefficients from the two models are presented in Table 7. These present the impact the variable has on the variable culture and are discussed in more detail below.

Table 7: The Ideation factors impact on Culture

	Model 1	Model 2
Constant	5.015** (0.374)	2.810** (0.441)
Gender	-0.718** (0.180)	-0.430** (0.135)
Age	-0.011 (0.009)	-0.014** (0.006)
Time at Company	0.014 (0.012)	0.012 (0.008)
Clear Vision		0.055 (0.083)
Resources		0.270** (0.077)
Responsibility		0.249** (0.086)
Incentives		-0.044 (0.065)
Access to Information		-0.156* (0.092)
Feedback		0.320** (0.080)
Interaction Arena		-0.022 (0.081)
N	70	70
R ² (adj)	0.183	0.624

*p<0.10, **p<0.05

Both models present a negative and significant value for the control variable Gender. In the analysis, the different genders were appointed the values: 1=male and 2=female. The negative coefficient for gender indicates that male respondents rate culture higher than female respondents. In Model 2, the control variable Age becomes significant. The negative influence indicates that older respondent rates the culture lower than younger respondents.

The significant ideation factors in Model 2 are Resources, Responsibility, Access to Information, and Feedback. Where all except Access to Information is significant to a degree of 95 percent, therefore, should the result for Access to Information be cautiously interpreted.

Resources and Responsibility are both significant and positive, with a value of 0.270, respectively 0.249. Not surprisingly, indicating that if there are resources and responsibilities allocated for the ideation process the culture surrounding ideation is shown to increase.

The factor Access to information is negative and significant. The significant value is however low. Although the factor is negative, indicating that more transparency in the ideation phase will lower the culture. This result is interesting due to previous research showing that transparency is important to enhance to ideation process (Boeddrich, 2004; Vukovic & Naik, 2011).

Moreover, Feedback is also positive and strongly significant. Hence proving that if Feedback is increased, the culture will increase as well. This is in line with earlier research and with the information stated from the external interviews. It is proving feedback to be an important factor for ideation. This relation can be interpreted to happen due to the increased discussion about the idea after feedback is provided and its influence on the company culture.

Test 2 – Ideation Effort

The second regression analysis test is performed with the dependent variable of Ideation Effort. This variable is measured in the effort an employee designates to an idea before submitting or presenting it to the company. The first model only includes the control variables, where the second model incorporates the ideation factors as well. In addition, the third model adds culture as a variable. This to investigate the potential mediator effect from the culture on the ideation effort.

The adjusted R² value, found in Table 8, is 0,041, 0,297 and 0,334 for each respective model. The change in R² is most appearing when the ideation factors are incorporated. However, there is a change of 0,034 between model 2 and 3, indicating a small explained variance by the variable culture on the ideation effort. From the ANOVA table, found in Appendix E, Model 1 is shown not to be significant. However, both Model 2 and Model 3 are significant.

Table 8: The impact of Ideation factors and Culture on Ideation Effort

	Model 1	Model 2	Model 3
Constant	3.772** (0.403)	2.995** (0.600)	1.973** (0.757)
Gender	-0.394** (0.194)	-0.502** (0.184)	-0.346* (0.193)
Age	-0.005 (0.009)	-0.011 (0.008)	-0.005 (0.008)
Time at Company	-0.010 (0.013)	-0.010 (0.011)	-0.014 (0.011)
Clear Vision		0.201* (0.113)	0.181 (0.111)
Resources		0.211** (0.105)	0.113 (0.112)
Responsibility		0.039 (0.118)	-0.051 (0.122)
Incentives		0.096 (0.088)	0.112 (0.086)
Access to Information		0.104 (0.125)	0.160 (0.125)
Feedback		-0.139 (0.108)	-0.256** (0.119)
Interaction Arena		-0.117 (0.110)	-0.109 (0.107)
Culture			0.364** (0.172)
N	70	70	70
R ² (adj)	0.041	0.297	0.334

*p<0.10. **p<0.05

The significant coefficients for Model 2 are: Gender, Clear Vision and Resources, see Table 8. Clear vision is significant to a degree of 0.10, and Gender and Resources are significant to a degree of 0.05. Gender is negative and both other factors are positive. In Model 2, the significance changes. Both Resources and Responsibility are not significant in model 3. Instead, Feedback and Culture are significant to a level of 0.05. Feedback is negative and Culture is positive. Gender stays the same throughout.

The positive value for Clear Vision indicates that if employees know what kind of ideas the company is searching for, they are more likely to increase their ideation effort. This relation can be due to the increased information for what the company wants, affecting employees to put more effort into their ideation. However, the significance level of Clear Vision decreases when Culture is incorporated in model 3.

Resources are positive and highly significant in model 1. This is not surprising since if the employees have more resources, such as time and money, for ideation, they will increase their effort for ideation. If they do not have time for ideation, they will not be able to designate a high effort. However, for model 2, Resources changes to be non-significant.

In Model 3, Feedback is negative and changed to a significant value. Indicating that if Feedback is increased, the Ideation Effort will decrease. This result is interesting due to external interview implying that feedback should increase the effort put by employees on ideation. One explanation for this value for Feedback is that if an employee devotes a high effort on formulating an idea, they will have a high expectation on the feedback provided.

Model 3 presents Culture as a significant positive variable. With a value of 0.364, it considered having a strong impact on the Ideation effort, showing that Culture is a mediating factor for Ideation Effort. This shows that if the company has a culture that enables ideation, the employees' effort to ideate will increase.

Test 3 – Quantity of submitted ideas

The third regression analysis test conducted was on the variable of quantity of submitted ideas during the previous year. This test was performed through four models. First, only the control variables than the control and Ideation Factors. In model 3-4, both Ideation Effort and Culture were included separately to investigate their potential mediator effect on the quantity of submitted ideas.

The adjusted R² value is increasing throughout the test, with the largest change between models 1 and 2 (0,088), presented in Table 9. Indicating that the Ideation Factors contribute the most explained variance in the quantity of submitted ideas. Further, the ANOVA table, found in Appendix E, indicates all models to be significant for the regression analysis. The model's coefficients are presented in Table 9.

Age is negative and significant for Model 1 and 2. This indicates that older employees tend to submit more ideas than younger employees. It is also noted that the time the respondent has been at the company has a positive impact on the quantity of submitted ideas. This variable stays positive with a significance level of under 0,05 throughout all four models. Implying that employees that have work for a long time at the company tend to submit more ideas. This can be a factor influenced to be the knowledge of the internal structure at the company. Older employees know better ways of submitting their ideas or have more knowledge of the work itself to find more ideas.

Clear Vision is also positive and strongly significant throughout all models. This is demonstrated by employees who agree that the company has a clear vision for their innovation tend to submit a higher quantity of ideas. This is not surprising since it is easier to ideate if you can focus on a specific problem, as shown in the earlier research by Gamlin, Yourd, and Patrick (2007). In this case, the specific problem would be what the company aims to achieve with its innovation work. However, the coefficient for Clear Vision is decreasing from Model 2 to Model 3, implying that the two mediators Ideation Effort and Culture are harming the impact of Clear Vision.

Responsibility is shown to have a significant negative impact on the quantity of submitted ideas in Model 3 and 4. The value of the impact is high at -1,565 and -2,250, which is considered a high-impact value. Implying that if the company got better at providing clear responsibilities for their employees, the quantity of ideas would decrease. This is interesting since Responsibility is discussed as a potential ideation enhancer. One explanation for this result may be that the employees do not relate a responsibility for ideation to their own quantity of submission or simply do not care about responsibility when they submit ideas.

Ideation and Culture are found to be significant and positive mediators in the quantity of submitted ideas in model 3-4. Ideation Effort impacts the quantity with a value of 2,106 and Culture with a value of 2,843, both of which are high values. The contribution by Ideation Effort can be explained by an employee that puts a lot of effort into ideation would logically ideate more ideas. The high value for Culture further solidifies the importance of having a company culture that enables innovation.

Table 9: The impact of ideation factors, Ideation effort and Culture on Quantity of submitted ideas

	Model 1	Model 2	Model 3	Model 4
Constant	7.476** (2.881)	0.975 (4.707)	-5.331 (5.455)	-11.645* (6.105)
Gender	-2.150 (1.385)	-2.378 (1.441)	-1.321 (1.486)	-0.380 (1.514)
Age	-0.111* (0.066)	-.127* (0.064)	-0.105 (0.064)	-0.070 (0.064)
Time at Company	0.402** (0.090)	.350** (0.089)	0.371** (0.087)	0.332** (0.087)
Clear Vision		2.276** (0.891)	1.852** (0.888)	1.809** (0.864)
Resources		.904 (0.827)	0.459 (0.830)	-0.189 (0.865)
Responsibility		-1.483 (0.923)	-1.565* (0.897)	-2.250** (0.932)
Incentives		-.054 (0.688)	-0.258 (0.676)	-0.079 (0.663)
Access to Information		.391 (0.983)	0.173 (0.960)	0.673 (0.964)
Feedback		-0.003 (0.848)	0.290 (0.836)	-0.698 (0.940)
Interaction Arena		0.323 (0.867)	0.570 (0.850)	0.566 (0.827)
Ideation Effort			2.106** (0.993)	1.546 (1.002)
Culture				2.843** (1.362)
N	70	70	70	70
R ² (adj)	0.236	0.324	0.362	0.397

*p<0.10. **p<0.05

The interesting aspect is that introducing Culture as a mediator, Ideation Effort becomes non-significant. Indicating that Culture is the real mediator for the Quantity of submitted ideas and not Ideation Effort, illustrated in Figure 9. Furthermore, Responsibility becomes significant negative when the mediators are introduced. This relation is interesting since Responsibility is discussed by earlier research as a potential ideation enhancer. One explanation for this result may be that the employees do not relate responsibility for ideation to their quantity of submission or do not care about responsibility when they submit ideas. It can also be a sign that if a company has assigned specific employees to work with ideation e.g. an innovation group, which would increase the innovative culture. The ordinary employees can feel left out in which they do not contribute since they are not specifically assigned to do so.

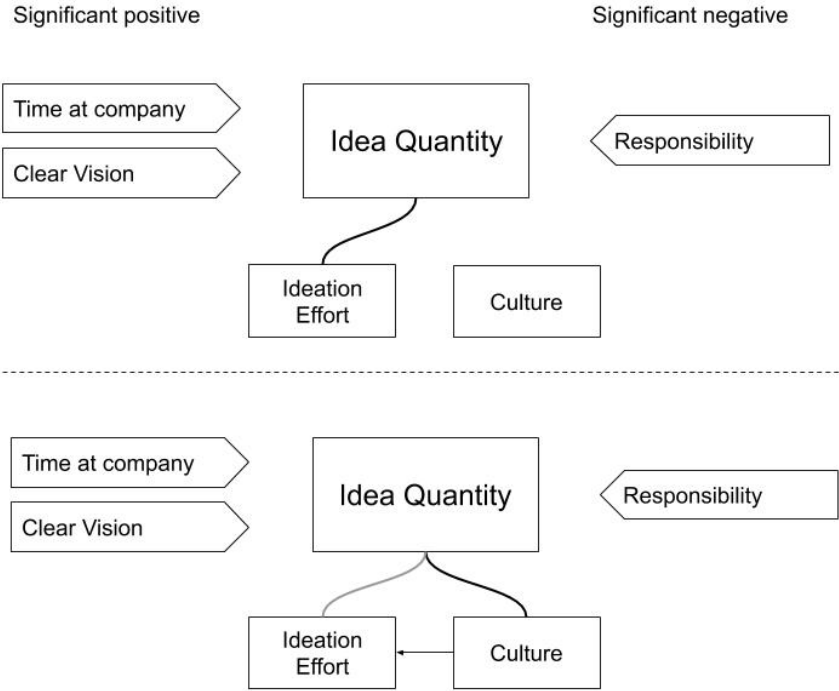


Figure 9: The mediating impact of Ideation Effort and Culture on the variable of Quantity

5.3. Internal Interviews

Internal interviews were conducted at Bengt Dahlgren to investigate the current situation at the company in order to come up with suggestions for improvement. The interview guide is presented in Appendix B. In total 20 employees were interviewed of different levels in the company hierarchy. To keep anonymity for the employees they are referred to interviewee 1-20.

Almost all interviewees consider Bengt Dahlgren as an innovative company. As an example, they mentioned Hives, which is the idea management system that Bengt Dahlgren has started. Some of those who see Bengt Dahlgren as an innovative company consider innovation as developing their work to be more efficient. So, the definition for innovation for them is not to create something new but to make the work more effective.

"I think because we try to show that we are willing, for example with Hives. We want innovative solutions, there is space for it. I think Hives is a tool for promoting innovation."

- Interviewee 3

Even though the majority consider Bengt Dahlgren as an innovative company, two of the interviewees do not call Bengt Dahlgren as an innovative company because they find that Bengt Dahlgren does not create anything new. The reason why employees have different views of the company from an innovative perspective can be because employees define innovation in different ways.

"Then there maybe problems that you have to solve but do not know if it will be so innovative. But don't think we're that innovative actually. "

- Interviewee 3

The consultants at Bengt Dahlgren work for their customer, and a lot of the ideas that employees create, they try to develop in the projects that are for the customer. They try to convince the customer to take the risk of developing the idea and in this way, they can do innovative work.

"Often we are very much controlled by customers or clients and it is they who decide how innovative we can be just because they make a lot of demands from us and then we have to work in a certain way, with a certain type of solution and system. I think it is then we have the opportunity to influence and come up with improvement and take that chance. "

- Interviewee 18

When it comes to ideas that are not customer-specific, employees at Bengt Dahlgren work freely towards the goals they set for themselves as well as the ideas they come up with. This means that the company does not work with any campaigns.

"What I do know is that it's free to do as you please. No super control really, but we have a lot of responsibility. What we are not so good at is taking advantage of what others have come up with"

- Interviewee 8

Half of the interviewees think they know what resources there are available for developing an idea. Some of them are members of the management team and thus know what resources are available. Others have some idea about it, but states that they can find out if needed. All those

who know what resources are available for developing an idea say that the resources are in the form of time, extra hours, that one can get to develop their idea.

"The resources are that you can get extra time to develop the work and the help you need. The important thing when highlighting an idea is always to highlight it from every aspect. What is needed and how much time will it take to create something that everyone can use."

- Interviewee 6

There are also eight people who do not know what resources they can get to develop an idea. This could be due in part to the fact that Bengt Dahlgren has not had any kind of structure for their ideation process. Those who came up with an idea and wanted to develop it have found out what resources there are available. Another reason why some employees do not know about the resources is because employees usually develop their ideas in projects that are for the customer. In such cases, it is the customer who is responsible for the resources and thus some employees do not know what resources Bengt Dahlgren offers for an idea development.

"I don't know exactly what resources there are for different types of ideas. It is the management who makes this decision and I am not in the management team, so I do not know."

- Interviewee 17

Most of the employees, 17 out of 20 people, mentioned several times that they do not have time to develop new ideas. They say that ideas exist, but it is the limited time acts as a barrier for developing a new idea. Interviewee 16, who is a department head and thus in the management team, says:

"The sad part is that we as managers do not have much time to be managers. We do not have much time for internal work. We have our own projects. We do not have extra hours per week to be managers and develop work in groups. We have our group meetings in the department, but we don't have much more time than that. It is the time that stops us. There are ideas that we can discuss but it is the time that stops us to develop the ideas."

- Interviewee 16

One of the reasons for time being a problem is because the customer is given priority in the first place. Internal projects are worked on if there is time left.

"We have had development projects as internal projects, but that will happen if time allows. Now we have two people who could take those projects, but those people can't work with this if they get other assignments from customers. Then we must prioritize other assignments instead. The customer is a priori one."

- Interviewee 16

The majority of those who know what resources there are to develop an idea also mention that you can get a budget to develop your idea. When discussing the possibility to get a budget for developing an idea, Interviewee 8 replies:

"Yes absolutely. Then, right now, it has stopped well just under the prevailing circumstances. But otherwise so absolute."

- Interviewee 8

Seven other interviewees agree with Interviewee 8. However, the budget can limit how much internal innovation can be done.

“It's the budget that controls it. We are on a build-up phase, so it is always a budget that limits how much internal innovation you can do.”

- Interviewee 20

There is no specific person at Bengt Dahlgren who drives ideation forward. The idea creator presents his/her idea to his/her closest manager, who then passes it to the management team for approval. The idea creator is the driver for the idea.

“As long as I formulate them. It is important to have the whole structure with you. You sell it, that is what it is all about. You need to do that to get someone interested and to show that you are engaged about it. Which is interesting with Bengt Dahlgren because if you come up with an idea, it is you who drives it yourself. Otherwise, it could be that if you raise an idea someone else is developing it but here it is that if you are dedicated and have an idea then it will be on your desk to drive it.”

- Interviewee 6

However, there are two people who think that another person should take care of the idea if the idea creator does not have the competencies and resources to develop their idea.

“If I encounter a problem, for example, something takes too long to recharge, or I can't get the equipment I need. Then I am not the right person to solve that problem, but then I want to be able to put that responsibility or just point it out to someone who can solve that problem.”

- Interviewee 13

Consultants at Bengt Dahlgren work for their customers and most of the ideas are developed in the projects that are for the customers. This means that the ideas that are created are customer-specific, they solve something which benefits the customer. One of Bengt Dahlgren's vision is to be the first choice for its customers, which they work actively to achieve.

“First of all, when working with customers, you first have to get them to buy the idea so that you can work with the idea there.”

- Interviewee 4

Few of the ideas are internal, for the improvement of the working process or to make the office a better place to work. In this case the customers are internal.

“I wrote in Hives, which got further to the management and they thought it was a good idea and they felt there was a need. The idea was that we should have a quality assurance team. So that when we do actions for people, installers, contractors, sometimes it's bigger and sometimes smaller projects. Most often it is that if you are the manager of a project then you are also a quality reviewer of the project, but sometimes you do not have time for it and you review it. Then it is good that you can send things for review. You can get a little blind if you work on the project and have to review it.”

- Interviewee 17

One of the 20 interviewees talk about transparency at Bengt Dahlgren's in terms of that one can check on the idea management system the number of comments and likes on ideas posted there. A reason why the remaining employees do not mention anything about transparency because

most of them do not submit any idea in the ideation program, and thereby they are not aware about the value of transparency. The only interviewee who mentions transparency says that it is possible to like and comment on ideas on the ideation program.

"It is reasonable that there are different areas and you can like and comment etc."

- Interviewee 3

However, half of the interviewees do not use the idea management system in any way. This is due in part to the fact that employees do not have time in addition to their projects to learn about the tool. Another reason for this can be that most of the ideas are customer-specific and thus not posted on the idea management system.

"I haven't had time to really get into it [Hives]."

- Interviewee 13

The idea creator receives feedback from the person the idea has been presented to, usually the nearest manager or the administration manager. Just as mentioned earlier, the ideas are approved by the manager for whom the idea has been presented, but if the manager cannot make the decision, he/she passes the idea on to the management team and the CEO has the last word. The manager provides feedback on the idea creator.

"And with those ideas I went to Sandra [department head] and pitched them, then I got a couple of hours to structure that job. After all, I submit it as a proposal and then she brings it up at a management meeting to get management approval."

- Interviewee 7

It should work to give feedback via the idea management system, but many employees who submitted an idea has not got any feedback. This can be a reason behind employees not feeling motivated to put their ideas in the idea management system because receiving feedback on ideas is shown to increase the motivation.

"The channel is not working properly so we do not get feedback on them. The idea is that you should submit your ideas. But you do not get feedback from the management or the innovation group"

- Interviewee 14

The reason behind why innovation group do not give feedback on the submitted ideas in the idea management system is because they do not know how to give feedback. They do not know how to evaluate the submitted ideas and how to reject the ones that will not be implemented.

"We looked at ideas and tried to evaluate it and move on with it, but then it took a little bit to stop. Especially with the feedback because we didn't know how to do it. When is it appropriate to provide feedback? If it is too early now, they will believe that the idea will be implemented or not. Then you must come with the fact that many ideas will actually be abandoned and how to kindly tell people that their idea was not good enough. You have to say it well for them to have the will to come back with new ideas."

- Interviewee 13

Knowledge sharing at Bengt Dahlgren mostly takes place during group meetings with the department, where employees raise their ideas and discuss with their colleagues. Those ideas stay with the people who attend group meetings. If the idea is related to the customer, it is

discussed with the customer, but if the idea relates to organizational development then it is discussed further with the management through the group manager.

“We bring it up in the group, because it is my boss who comes up with innovative ideas. To discuss it more than just with our group we discuss it with Lars [CEO] and discuss it further. If it is project-related, then maybe we push the customer to dare to invest or we search for research money and stuff like that.”

- Interviewee 11

In the idea management system, it is possible to see what ideas others have come up with, this is something that 2 out of 20 interviewees talk about. The reason why many people do not see the idea management system as a knowledge-sharing platform can again be because they do not put their ideas there as they are most customer-specific or that employees do not have time to work on idea development that is not customer-related.

“But then with the Hives app, more people are affected by the ideas that come in. There are more eyes and brains that can be involved in processing what comes in, instead of the time when it was just him [manager] and me. After all, it can be built on new ideas and built on ideas that come in there. ”

- Interviewee 1

The idea management system is a tool that will facilitate communication, facilitate the management of ideas, increase knowledge sharing and increase transparency. Just as mentioned earlier, not many employees use it, but two of those interviewees use the program as an interaction arena and thus a way to improve ideation management.

“I think Hives is on the track there. It is precisely by posting the proposal there and that many see it. That you can still get an overview if more people see it as interesting or a good idea. And the more people who think it is good, the better ideas it is. And maybe easier to realize.”

- Interviewee 6

From the interviews, it seems that the employees at Bengt Dahlgren find that the company has an innovative culture in that they have the will to develop, they listen to their employees if someone comes up with an idea, they are responsive, and they do not deny their employees if they come with an idea. All the employees highlight that their ideas are taken seriously by the company. Employees have individual meetings with their managers about development and new opportunities. This is something that 18 out of 20 interviewees agree with.

“We have individual meetings with our managers once a year and there we put notes on how to develop as individuals and also within the company. It can be anything, from social aspects to technical aspects etc. We write down all the goals you want for the coming year and you go through them from last year and see if you have reached them. It depends partly on how you are as a person. If you are someone who strives to develop, you can do it. There are opportunities for that too. Bengt Dahlgren as an employer helps you with the tools needed to develop if you want to develop.”

- Interviewee 3

All the interviewees feel like a part of the community at Bengt Dahlgren, this motivates them to contribute with ideas. Being heard and seen by getting feedback for the ideas increases the motivation to come up with ideas.

“I have definitely experienced that because I feel being seen and heard by the company. I get general feedback. The company is responsive to feedback in general, if I come up with things I want to develop.”

- Interviewee 5

When it comes to motivating the employees actively, some employees state that the company does not motivate them actively.

“They do not motivate actively, but indirectly absolutely. They listen to the opinions and ideas of others, even if you want to make a difference in the workplace, they listen. Not something directly but indirectly yes.”

- Interviewee 3

When it comes to motivation in the form of incentives, one of the interviewees mentions that reward can increase motivation. The remaining interviewees do not mention incentives for increasing motivation for idea generation. This is partly due to Bengt Dahlgren not distributing incentives and partly because no specific question has been asked about incentives. The interview guide for internal interviews was created before analysing external interviews. Sub-factors such as incentives were added to the new expanded framework.

“I personally don't care about it because I have a lot of ideas anyway and think it's fun anyway. But at the same time, it might get the big crowd to come up with ideas as well. E.g. it was a guy at my old job who got an idea which made 1 million profit and then he got 5% in reward. People are not generally greedy, but I think it can be a small boost.”

- Interviewee 19

The ideas that the interviewees have submitted are only incremental. They want to develop their work to be more efficient. The reason behind why the employees only come up with incremental ideas can be because the company does not ask for disruptive ideas.

“Well, I would probably say that, and we try to develop and do our work more efficiently all the time.”

- Interviewee 5

Summary of internal interviews

A summary of the current situation at Bengt Dahlgren is presented in Table 10. How the current situation is regarding each factor is described in the table.

Table 10: Summary of internal interview result for the current situation

Factors	Description
Clear vision	The majority consider Bengt Dahlgren as an innovation company. The company does not work with campaigns.
Resources	There is a lack of resources, especially in form of time.
Responsibility	Roles for responsibilities as Coach and Categories are missing at Bengt Dahlgren.
Access to information	There is no way of working with transparency.
Communication	Feedback from the management is appreciated, but no feedback has been given to the ones that have submitted ideas through the ideation program. Knowledge sharing happens within a group of employees in different departments.
Interaction Arena	An ideation program is launched for interacting, but this program has not been used by many employees.
Motivation	Employees feel like a part of the community which increases their motivation to contribute ideas. The firm does not work actively to increase the motivation of their employees to contribute ideas.
Culture	The culture is considered to be innovative in terms of that the management has the will to develop, they listen to their employee if someone comes up with an idea, they are responsive, and they have individual meetings with their managers about development and new opportunities.
Outcome	The type of ideas that are submitted are incremental.

5.4. Similarities between survey and internal interviews

There are similarities in the responses from the survey and the internal interviews. The questions in both the survey and the internal interviews originate from the factors presented in the framework. This in order to investigate if there are any interrelationships between the ideation factors and the ideation output. Additionally, to get a deeper understanding of the current situation of the ideation work at the company, and then to be able to make a recommendation to change or complement their way of working with their idea generation.

Both from the survey and the interviews, it is clear the company's culture is enabling innovation. In the interviews, multiple respondents state that they feel a community surrounding the company's innovation and that the people suggesting new ideas in the company are supported.

This relation is shown in the survey as well, where the respondents positively agree with all statements related to the company's culture.

Further, there is an emphasis on the lack of resources at Bengt Dahlgren from the two data groups. Where both groups clearly state that time is a limiting factor. The survey presents that resources are considered low for innovation work and that if they are increased, it will positively impact the culture and ideation effort. Further, the interviews indicate that most interviewees do not know what resources are available for innovative work. This unawareness can be an explanation as to why resources were rated low in the survey.

6. Discussion

In the following section the result from all collecting data during this study is discussed. Initially the result from questionnaire to find the interrelationship between the ideation factors and the ideation output is discussed. Further the result from result from external and internal interviews are discussed.

The questions in the survey can be further discussed and tested to increase the result solidity. As it is noted that a few questions do not measure their specific item, and therefore are not included in the analysis. By pre-testing, the survey first, the Cronbach Alpha would also improve. Unfortunately, it was not possible due to time limitations.

Further, the adjusted R^2 value is strong for the ideation factors' impact on Culture, 0,624. It is indicating that ideation factors can describe 60 percent of the innovative culture. However, rather low for Ideation Effort and Quantity of submitted ideas. With an adjusted R^2 of 0,297 and 0,324, respectively, with the ideation factors and a value of 0,334 and 0,397 with mediators. Hence the variation explained by the ideation factors and mediators is only approximately 30-40 percent. This low value indicates that other factors are influencing the Effort and Quantity, that are not measured in this test.

In Test 3, Responsibility presents an unusual high negative value, which is interesting. It also is decreasing when the mediators' Ideation Effort and Culture are introduced. In model 4, the value is -2,250, with a high significance. This result indicates that if Responsibility increases, the quantity of submitted ideas will decrease. This relation is not in line with earlier research and could be a problem with the measurement questions for the factor.

Furthermore, even though the employees were reminded to respond to the survey, there was only a 44 percent response rate. In total, 70 responses, which is considered rather low. Increasing the response rate might have altered the result.

Moreover, the external interviews provided a stable base knowledge about the subject. They also proved crucial for improving the framework. The sample size of six external interviews is rather small. With an increased number of interviews, further factors might have been uncovered. For this study, the researchers focused on providing a recommendation for how Bengt Dahlgren should adjust their ideation process. Therefore, the scope only included six external companies, since, according to the theory, an ideation process will be highly individual for each company. Justifying that a single case study was the best option for this project.

Moreover, the interview guide for the internal interviews was designed before the redefined framework was finished. This delay caused some factors to be left out. However, during the interviews, some factors were discussed even if they were not explicitly included in the interview guide. This happened due to the semi-structure of the interviews. This semi-structure enabled a discussion to start were factors from the framework arose.

7. Implications

This chapter presents both the theoretical and practical implications. The main findings and how the research questions are answered are presented.

The research questions that were investigated within this study were as follows:

RQ1. What factors are important to take into consideration for internal ideation?

RQ2. What are the interrelationships between the ideation factors and their effect on the outcome of the ideation phase?

The first research question has been answered with the help of literature studies and external interviews. From the literature studies, a tentative framework was developed for the most important factors for internal ideation, as well as subfactors for them. These factors were then confirmed by external interviews. In addition, the external interviews provided an insight in how the factors and subfactors are related to the practical world by the interviewees that have years of experience in the field of ideation management. From external interviews, several other factors were found that proved important for ideation and the framework was rearranged. There might be factors related to ideation that have not been found, but in such cases these factors are not among the most important as they are not included in either the literature studies or in external interviews. The factors found are: Clear Vision, Responsibility, Resources, Access to Information, Communication, Interaction arena, Culture and Motivation. These factors will influence the company's outcome in form of quantity, quality and type of ideas submitted. The factors are further described in Table 11 below.

Table 11: Description of ideation factors.

Factor	Description
Clear Vision	Set strategic goals for the ideation. Align those goals with focus areas to create the right ideation for the company.
Responsibility	Delegate responsibilities throughout the ideation phase. Delegate the roles of: Coach, Customer, Category and Driver.
Resources	Allocate resources to ideation to enable it. As well as setting requirements to not waste resources.
Access to information	Provide employees with transparency regarding the ideation process.
Communication	Provide feedback for every idea. By commenting on ideas, they can be improved. Communication also serves an important part of realizing other factors.
Interaction Arena	Collect all ideation work in one place for easy structure.
Culture	Enable ideation through an open culture at the company where new ideas are encouraged.
Motivation	Motivate employees to submit ideas or suggestions for improvements.

Research question two is answered through the regression analysis on the survey. From the analysis, there are relationships found between factors and output. The output variable Culture has strong relations to Responsibility, Resources, and Feedback. Indicating that those three factors are important to elevate a company's culture to enable innovation. The output of Ideation Effort is related to Clear Vision and Resources, indicating that employees who know what the company wants and have the right resources tend to put more effort into their ideation.

Interestingly, Culture has a high impact on Ideation Effort. This can be explained by a company with an innovative culture having employees who make a higher effort for their ideation. The Quantity of submitted ideas is closely related to the factor of Clear Vision. This implies that a company with a clear vision for their innovation work gets more ideas submitted by their employees. Quantity of submitted ideas is also related to the two mentioned outputs, Culture and Ideation Effort. This relation is implying that an innovation Culture and Ideation Effort are in a circular flow that is proving to be both an output of ideation as well as a factor for it.

Interviews at the company were conducted to find out how the company works with ideation. Although both managers and employees were interviewed, there was no difference in how they perceived the company's current situation. There was nothing evident that managers mentioned that employees disagreed with or vice versa. Nor was there anything special about the responses between employees from different departments. Even though the management does not motivate the employees actively to come up with ideas, the employees contribute with ideas. Because the employees feel that they are taken seriously, they feel that they are being seen and heard. In this way, the company has created an innovative culture. The feedback through the idea management system does not work as it should, but employees think that direct feedback from the person to whom the idea has been submitted works well. This leads to employees feeling like part of the community and thus feeling motivated to contribute ideas.

There is a lack of resources in the form of time at Bengt Dahlgren to work with ideation. This can be a reason why people do not contribute with ideas because the person who comes up with an idea must drive and develop it. If there were different roles for responsibilities, employees would have come up with ideas, even if the submitter did not have time. This is also a reason behind the type of ideas being more related to incremental changes. Disruptive ideas use to require more resources than incremental ideas. Something strange to note is that the culture seems to be perceived as innovative despite the lack of resources.

8. Future work

In the next section, recommendation for future work is presented. These are areas that would be interesting to further the research around in order to further map internal ideation.

As this study has investigated, there are consistent factors to take into consideration for internal ideation. One potential future research area would be to investigate each factor closer. Since it was found that each factor is influenced by many different subfactors. It would also be interesting to investigate if these factors influence the ideation work in different phases of the innovation process.

This study has shown that organizations often work with incremental ideas because it is more difficult to produce disruptive ideas. A future research is to investigate what factors influence internal ideation for specific disruptive vs incremental ideas. What factors should be more focused on to get more disruptive ideas when it is required.

This study was to investigate what factors are important for an internal ideation. A future research is to investigate how these factors influence an idea selection phase. Which is the phase after ideation. In order to see how the ideation factors, relate to the selection of ideas. It would also be interesting to investigate which of the identified factors have an impact on the whole innovation process, from idea generation to idea development.

Furthermore, this study investigated how Bengt Dahlgren Stockholm AB would be able to increase its ideation. This is only one out of six of Bengt Dahlgren's offices. As the next step in this research investigating the other offices and how they would be able to incorporate different aspects of this research would be interesting.

9. Recommendation for Bengt Dahlgren

In this chapter recommendations for Bengt Dahlgren are presented. These recommendations are made for the company on how they can improve or change their way of working with internal ideation.

Bengt Dahlgren should have a clear strategic guideline for innovation to generate better ideas from the employees. This strategy should be aligned with the company's overall corporate vision to increase the chances of success. If the company successfully align these it will make it easier for the company to invest resources for ideation, due to the link between the innovation work and the company vision.

The company should also work with focus areas, thus focusing ideation on problematic areas. The focus should also be aligned with the company's strategy. This will help the company to generate ideas in higher quality and to gain ideas that are more adept for the company. To work with focus areas successfully, there should be a well-defined problem. Before presenting the problem, it should be clear why it is a problem and for who it is a problem. Because the company is willing to work with innovation actively, they should work both with challenges and categories. Each category should be a broad question or subject and presented permanently, where the employees can add ideas whenever they have one. There should be a responsible person for evaluating the ideas within the categories. The challenges should be for a set time period and focus on a specific problem to solve. Here the company also need to have a responsible person for the challenge, who at the end of the time period, will evaluate the submitted ideas.

There is a lack of resources in the form of time for working with ideation at Bengt Dahlgren. Employees do feel that there is not enough time to be innovative and work with new ideas. There are suggestions from the interviews that employees hesitate to submit ideas because they know they will be the person who must develop the idea, which they point out that they do not have the time for. To solve this problem the company has three options: (1) include innovation activities into the regular work, (2) provide slack time to work with innovation, (3) appoint an employee who gets time to work solely on realizing ideas.

There are four different roles of responsibilities within ideation: driver, customer, categories, and coach. At the moment, the idea creator is the driver for the idea. To make it easier for the employees there is a need for a driver, a person who is responsible to drive the idea. Most of the ideas generated at Bengt Dahlgren are for the customers. The customer is someone who knows what they want or someone the problem will be solved for. This role of responsibility seems to work well at the company. This type of customer is either an internal customer or a customer for the company. If Bengt Dahlgren starts working with focus areas, then they should have a person responsible for each category and a responsible person for the challenges. To increase innovation activities, Bengt Dahlgren should have someone who is responsible to motivate innovation activities and who can activate the employees in order to generate ideas. These roles of responsibilities need to be delegated to secure the innovation process.

Furthermore, there are sign of a problem surrounding knowledge between the employees at Bengt Dahlgren. As seen with the resources discussed, some employees know about it and some do not even know they can get resources for internal projects. This research has found that working transparently with ideation is important. Which is why Bengt Dahlgren needs to get

better at communication between the innovation management and the employees. This can be done by a transparent system for ideation which can help the employees to know what is going on. Working transparently will also encourage employees to generate ideas and to build on others. To increase the motivation among the employees for submitting ideas, the company should be better at providing feedback. The more information employees get about the ideation process and about what kind of ideas management wants, the easier it gets for them to adjust their ideas. Working transparently will get much easier if the company uses a platform for innovation.

The company already has an idea management system, however the communication through it must be better. Firstly, the employees managing it need to structure their work surrounding the platform, to be able to use it effectively. Secondly, they need to adapt their work relating to categories and challenges earlier mentioned, since these are proven to increase both the quality and quantity of submitted ideas. The company should work on their communication and between innovation management and employees through the platform. When the communication increases, knowledge sharing will also increase which is an important part of the ideation. Through communication the employees have the possibility to comment on each other's ideas and thereby build on each other's ideas.

Bengt Dahlgren has a good culture for enabling internal ideation, established by both the quantitative and qualitative data. Employees feel that their ideas are taken seriously, and they feel a part of a community, which motivates them to contribute with ideas. The company can work more with motivating their employees actively. This may be done by presenting ideas on screens in the office or in articles in the company's intranet to elevate the innovative work. Another way for increasing motivation among the employees is to link the employees' regular work to internal innovation, to make them see that it is beneficial to themselves to be innovative. Management should make it clear for the employees the impact of being innovative. The company can use monetary rewards to increase the extrinsic motivation, but the focus should be on working with the intrinsic motivation to get a higher quality on the ideas. One way to increase intrinsic motivation by giving intrinsic rewards such as recognition and feeling self-accomplishment.

The aim of the internal ideation for Bengt Dahlgren should be a diverse idea portfolio, including both incremental and disruptive ideas. The balance between the two should be discussed by management, however due to the uncertainty of disruptive ideas future success incremental ideas should be prioritized. To solve this balance innovation management, need to set up categories and challengers that will reflect their desired outcome. The quality of the ideas will also depend on how the problem/ question is formulated. If the aim of the ideation process is to get higher quality ideas, then the employees have to formulate their ideas in more detail, but if the goal is to get as many ideas as possible then it should be easier for the employees to apply their ideas.

10. References

- Abdullah, N. H., Wahab, E., & Shamsuddin, A. (2016). Organizational Culture, Creativity Climate and Organizational Innovativeness: Are They Linked? . *International Journal of Research in Management, Science & Technology*, 3(4), pp. 106-110.
- Adams, R., Bessant, J., & Phelps, R. (2006). Innovation management measurement: A review. *International Journal of Management Reviews*, 8(1), pp. 21-47.
- Bakker, H., Boersma, K., & Oreel, S. (2006). Creativity (Ideas) Management in Industrial R&D Organizations: A Crea-Political Process Model and an Empirical illustration of Corus RD&T. *Creativity and innovation management*, 15(3), pp. 296-309.
- Bengt Dahlgren AB. (den 30 01 2020). *About us*. Hämtat från <https://en.bengtdahlgren.se/about-us/>
- Beretta, M., Björk, J., & Magnusson, M. (2017). Moderating Ideation in Web-Enabled Ideation Systems . *Journal of product innovation management*, 35(3), pp. 389–409.
- Bergendahl, M., Dagnino, G. B., Ferrigno, G., & Magnusson, M. (2015). *Coopetition and ideation performance: Observations from two complementary experiments*. Stockholm.
- Bergendahl, M., Magnusson, M., & Björk, J. (2015). Ideation High Performers: A Study of Motivational Factors. *Creativity Research Journal*, 27(4), pp. 361-368.
- Björk, J., & Magnusson, M. (2009). Where Do Good Innovation Ideas Come From? Exploring the Influence of Network Connectivity on Innovation Idea Quality. *Journal of Product Innovation Management*, 26(6), pp. 662-670.
- Björk, J., Boccardelli, P., & Magnusson, M. (2010). Ideation Capabilities for Continuous. *Creativity and innovation management*, 19(4).
- Björk, J., Di Vincenzo, F., Magnusson, M., & Mascia, D. (2011). The Impact of Social Capital on Ideation . *Industry and Innovation*, 18, pp. 631-647.
- Boeddrich, H.-J. (2004). Ideas in the Workplace: A New Approach Towards Organizing the Fuzzy Front End of the Innovation Process. *Creativity and Innovation Management*, 13(4), pp. 274-285.
- Brix, J. (2012). Individual learning, ideation and innovation management. *International Journal of Quality and Innovation* , 2(1).
- Chiu, H. H. (2018). Employees' Intrinsic and Extrinsic Motivations in Innovation Implementation: The Moderation Role of Managers' Persuasive and Assertive Strategies. *Journal of Change Management*, 18(3), pp. 218-239.
- Cooper, R., & Edgett, S. (2008). Ideation for product innovation; What are the best methods? *PDMA Visions Magazine*, s. 32.
- Dahlander, L., & Magnusson, M. (2008). How do Firms Make Use of Open Source Communities? *Long Range Planning*, 41(6), pp. 629-649.
- Eisenhardt, K. M. (1989). Building Theories from Case Study Research. *The Academy of Management*, 14(4), pp. 532-550.

- Elerud-Tryde, A., & Hooge, S. (2014). Beyond the Generation of Ideas: Virtual Idea Campaigns to Spur Creativity and Innovation. *Creativity and Innovation Management*, 23(3), pp. 290-302.
- Fairbank, J. F., & Williams, S. D. (2008). Motivating Creativity and Enhancing. *Creativity and innovation management*, 10(2), pp. 68-74.
- Frese, M., Teng, E., & Wijnen, C. J. (1999). Helping to improve suggestion systems: Predictors of making suggestions in companies. *Journal of Organizational Behavior*, 20(7), pp. 1139-1155.
- Füller, J., Hutter, K., Hautz, J., & Matzler, K. (2017). The Role of Professionalism in Innovation Contest Communities. *Long Range Planning*, 50(2), pp. 243-259.
- Gamlin, J. N., Yourd, R., & Patrick, V. (2007). Unlock Creativity with “Active” Idea Management. *Research-Technology Management*, 50(1), pp. 13-16.
- Gerlach S, & A, B. (2017). Idea management revisited: A review of the literature and guide for implementation. *International Journal of Innovation Studies*, 1(2), pp. 144-161.
- Heising, W. (2012). The integration of ideation and project portfolio management—A key factor for sustainable success. *International Journal of Project Management*, 30(5), pp. 582-595.
- Herstatt, C., Verworn, B., & Nagahira, A. (2004). Reducing Project Related Uncertainty in the “Fuzzy Front End” of Innovation — A Comparison of German and Japanese Product Innovation Projects. *Management of Technology and Innovation*, pp. 329-352.
- Hesmer, A., Hribernik, K. A., Baalsrud Hauge, J. M., & Thoben, K. D. (2011). Supporting the ideation processes by a collaborative online based toolset. *International Journal of Technology Management*, 55(3), pp. 218-225.
- Kilpatrick, A., & Silverman, L. (2005). The power of vision. *Strategy & Leadership*, 33(2), pp. 24-26.
- Kock, A., Heising, W., & Gemünden, H. G. (2015). How Ideation Portfolio Management Influences Front-End Success. *Journal of Product Innovation Management*, 32(4), pp. 539-555.
- Kothari, C. R. (2004). *Research Methodology - Methods and techniques*. New Age International (P) Ltd.
- Leavy, B. (2011). "A leader's guide to creating an innovation culture". *Strategy & Leadership*, 33(4), pp. 38-45.
- Lloyd, G. C. (1999). Stuff the suggestions box. *Total Quality Management*, 10(6), pp. 869-875
- Magnusson, P. (2009). Exploring the Contributions of Involving Ordinary Users in Ideation of Technology-Based Services. *Journal of Product Innovation Management*, 26(5), pp. 578-593.
- Martins, E., & Terblanche, F. (2003). Culture that stimulates creativity and innovation. *European Journal of Innovation Management*, 6(1), pp. 64-74.

- Morgan, J., & Wang, R. (2010). Tournaments for Ideas. *California Management Review*, 52(2), pp. 77-97.
- Murphy, S., & Kumar, V. (2002). The Front End of New Product Development: A Canadian Survey. *R&D Management*, 27, pp. 5 - 15.
- Paulus, P., Baruah, J., & Kenworthy, J. (2018). Enhancing Collaborative Ideation in Organizations. *Front. Psychol.*
- Persaud, A. (2005). Enhancing Synergistic Innovative Capability in Multinational Corporations: An Empirical Investigation. *Journal of Product Innovation Management*, 22, pp. 412-429.
- Porter, M. E., & Ketels, C. H. (2003). UK Competitiveness: Moving to the Next Stage. *DTI Economics Paper*.
- Reid, S., & De Brentani, U. (2004). The Fuzzy Front End of New Product Development for Discontinuous Innovations: A Theoretical Model. *Journal of Product Innovation Management*, 21, pp. 170-184.
- Rietzschel, E. F., Nijstad, B. A., & Stroebe, W. (2010). The selection of creative ideas after individual idea generation: Choosing between creativity and impact. *Creativity and innovation management*, 101, pp. 47-68.
- Rohrbeck, R., Thom, N., & Arnold, H. (2015). IT Tools for Foresight: The integrated insight and response system of Deutsche Telekom Innovation. *Technological Forecasting and Social Change*, 97(1) , pp. 115–126.
- Rowley, J. (2012). Conducting research interviews. *Management Research Review*, 35(3/4), pp. 260-271.
- Salomo, S., Talke, K., & Strecker, N. (2008). Innovation Field Orientation and Its Effect on Innovativeness and Firm Performance. *Journal of Product Innovation Management*, 25(6), pp. 560-576.
- Sandström, C., & Björk, J. (2010). Idea Management Systems for a Changing Innovation Landscape. *International Journal of Product*, 11(3/4), pp. 310-324.
- Sharifirad, M., & Ataei, V. (2012). Organizational culture and innovation culture: exploring the relationships between constructs. *Leadership & Organization Development Journal*, 33(5).
- Stieger, D., Matzler, K., Chatterjee, S., & Ladstaetter-Fussenegger, F. (2012). Democratizing Strategy: How Crowdsourcing Can Be Used for Strategy Dialogues. *California Management Review*, 54(4), pp. 44–68.
- Van Dijk, C., & Van Den Ende, J. (2002). Suggestion systems: transferring employee creativity into practicable ideas. *R&D Management*, 32(5), pp. 387-395.
- Veryzer, R. W. (1998). Discontinuous Innovation and the New Product Development Process. *Journal of Product Innovation Management*, 15(4), pp. 304-321.
- Whelan, E., Parise, S., de Valk, J., & Aalbers, R. (2011). Creating employee networks that deliver open innovation. *MIT Sloan Management Review*, 53(1), pp. 37–44.

- Volberda, H. W., Bosch, F. A., & Heij, C. V. (2013). Management Innovation: Management as Fertile Ground for Innovation. *European Management Review*, 10, pp. 1-15.
- Vukovic, M. (2009). Crowdsourcing for Enterprises. *Congress on Servicess - I*, pp. 686–692.
- Vukovic, M., & Naik, V. K. (2011). Managing Enterprise IT Systems Using Online Communities. *IEEE International Conference on Services Computing*, pp. 552-559.
- Yin, R. K. (2017). *Case Study Research and Applications: Design and Methods*. SAGE Publications.
- Zhang, Q., & Doll, W. J. (2001). The fuzzy front end and success of new product development: a causal model. *The British Psychological Society*, 4(2), pp. 95-112 .
- Zuchowski, O., Posegga, O., Schlagwein, D., & Fischbach, K. (2016). Internal Crowdsourcing: Conceptual Framework, Structured Review and Research Agenda. *Journal of Information Technology*, 31, pp. 166–184.

Appendix A: Interview guide for external interviews

In this appendix the interview guide for the external interviews is presented.

Preface

Thank you for taking your time for an interview. Is it okay if we record the interview to not miss anything when analysing all interviews? Do you want to remain anonymous?

Background

We do our master's studies in innovation management and product development. We carry out the thesis work at a company called Bengt Dahlgren, a group company in construction. The aim of our thesis is to investigate the balance between different factors in idea generation. The aim of the work is also to develop a method for how Bengt Dahlgren should work with idea generation.

Questions

Tell us about yourself.

What is your name?

What is your role in the company?

How long have you been working with this?

Ideation

What do you think is the best way to work with your tool?

Have you seen any specific things companies do to make the most of your tool?

How do you think companies should work to get their employees to use your tool? What are the typical mistakes that companies make that make employees not feel motivated to use your tool?

Why do you think companies fail to get the best out of your tool?

Is there anything you want to improve with your tool?

If so, how do you want to solve it?

Innovation management

How do you think organizations should work with innovation?

How do you think companies should work to be innovative?

How do you work with innovation?

How do you think companies should work with disruptive respective incremental innovation?

How do you recommend using your tool to avoid disruptive ideas being sorted out?

How much support does an organization need from its management when working with innovation?

How do you think companies should work with idea generation?

How do you work with idea generation?

What do you think the companies do to succeed with idea generation?

Do you think companies that work with focus / theme get more ideas?

By focus I mean when a company has a specific question that they present to employees and work with it actively.

How do you think an idea generation process should look, the process from an employee gets an idea till it develops?

How long will it take to get feedback for the submitted idea?

What are the typical mistakes that companies make in the idea generation process?

How do you think the idea selection process should be?

Who should be in the process?

How much should the program help in selecting ideas?

How do you think an idea should be managed?

Motivation and integration of employees

How do you think organizations should work to motivate employees to work innovatively?
(intrinsic and extrinsic motivation)

How do you think companies should work to motivate their employees about idea generation?

What are the typical mistakes companies make that make employees not feel motivated to generate ideas?

How can it be improved?

How can companies create a creative work environment?

Appendix B: Interview guide for internal interviews

This appendix presents the interview guide for the internal interviews.

Preface

Thank you for taking your time for an interview. Is it okay if we record the interview so we do not miss anything when analysing all interviews? Do you want to remain anonymous?

Background

We do our master thesis in innovation management and product development. We are doing our degree project here at Bengt Dahlgren. The work is about investigating the important factors when working with internal ideation and to investigate the interrelationships between the ideation factors and the ideation output. The aim of the work is also to come with recommendations for how Bengt Dahlgren should work with internal idea generation.

Questions

Introduction

Tell us about yourself

What is your role in the company?

Which department do you work at?

What do you do?

How do you work with development today generally in your department?

Would you say that innovation is something that is a part of your daily work?

The employees

How do you work with your ideas?

Have you ever come up with an idea you wanted to develop? [Example]

What approaches did you use?

How do you think that process could have been improved?

What is idea management for you?

Does it happen that you document ideas you have? [How?]

Do you feel you know where to go if you get an idea you want to test?

Do you know what resources you can get to develop an idea?

Is there time and space to discuss and bring up new ideas? (At group meetings or similar)

Do you know what happens to your idea after you have submitted it?

How do you think your idea should be handled?

The company

Do you think Bengt Dahlgren is an innovative company? [Explain]

Do you think Bengt Dahlgren motivates you as an employee to contribute with ideas for how you can improve your work? [How]

What motivates you the most to come up with ideas for how you can improve your work?

Do you feel that ideas that are raised are taken seriously by the company? [example]

Does it happen that people from other departments come up with ideas for your department?

You have been given a idea management system called Hives. Have you heard of that program?

Have you checked that program?

What did you do there?

Did you understand the program quickly?

Special questions to the innovation group

How do you structure the work from the idea management system?

Do the employees receive any feedback on their ideas?

How is the evaluation of ideas going?

What do you want to get out of the idea management system?

Appendix C: Questionnaire

In this appendix is the questionnaire presented. It has been translated from Swedish, which was the original language.

Variable	Question	Reference
Control	Age? Gender? How long have you worked on Bengt Dahlgren? <i>Answer themself</i>	
Improvements	In my work I often think of new ideas that can lead to improvements	(Frese et al., 1999)
Optimization	I constantly find ways to optimize my work	
Problem solving	I like to contribute with new ideas for how we can solve problems in the workplace <i>Scale 1–5: Disagree - Agree</i>	
<i>Innovations result</i>		
Quantity	How many work-related ideas did you submit during last year?	
Quantity	How many was realized? <i>Answers in numbers</i>	
Ideation Effort	I think a lot about solutions to work-related problems.	
Ideation Effort	I dedicate a lot of time to explore ideas I have.	
Ideation Effort	I dedicate a lot of time to formulate my idea before I present it to others at the company.	
Type	My ideas are mostly about improvements to existing services we offer.	
Type	My ideas are mostly about improvements to our work process.	
Type	My ideas are mostly about new business opportunities. <i>Scale 1–5: Disagree - Agree</i>	
<i>Innovation Culture</i>		
Culture	I do not feel motivated to submit ideas due to not seeing a result of it.	
Culture	I do not consider it to be worth the effort to submit new ideas.	
Culture	To see other people's ideas be realized encourage me to generate more ideas.	
Culture	To see other people being innovative motivates me to be it as well.	
Culture	Innovation diffuses through our whole organisation.	

<i>Culture</i>	When I submit an idea, it is taken seriously.	(Frese et al., 1999)
<i>Culture</i>	My superior manager encourages me to submit suggestions for ideas.	(Frese et al., 1999)
<i>Culture</i>	Employees dare to take the initiative for new ideas in the organisation.	(Kock et al., 2014)

Scale 1–5: Disagree - Agree

Ideation Factors

<i>Clear vision</i>	I know what the company want with their innovative work.	
<i>Clear vision</i>	The company’s goals and strategy are guidelines for our innovations.	(Kock et al., 2014)
<i>Resources</i>	There is enough time to work with innovation activities.	
<i>Resources</i>	It is possible to get a budget to explore and test new ideas.	
<i>Resources</i>	It is possible to get resources for innovation activities.	
<i>Responsibility</i>	It is clear who is responsible for innovation activities.	
<i>Responsibility</i>	It is clear who to turn to if you have an idea you want to realize.	
<i>Responsibility</i>	In our organization, the responsibility within the idea management (idea generator, idea evaluator and management) is clear and formal.	(Kock et al., 2014)
<i>Incentives</i>	I would submit more ideas if it was rewarded to a greater extent.	(Frese et al., 1999)
<i>Incentives</i>	Rewards are important to me when I submit an idea.	(Frese et al., 1999)
<i>Incentives</i>	I think recognition is an important motivation to send in a suggestion for a new idea.	(Frese et al., 1999)
<i>Access to information</i>	I can follow the development of my idea.	
<i>Access to information</i>	I can follow the development of other people’s ideas.	
<i>Access to information</i>	The process of idea management is transparent for everybody.	(Kock et al., 2014)
<i>Feedback</i>	I can see in the feedback that they understood my idea in a correct way.	(Frese et al., 1999)
<i>Feedback</i>	You get feedback fast for your ideas you submit.	(Kock et al., 2014)
<i>Feedback</i>	If you submit an idea you get constructive feedback, even if the idea is rejected.	(Kock et al., 2014)
<i>Interaction Arena</i>	When I get an idea I know where to submit it.	
<i>Interaction Arena</i>	It is easy to find other peoples submitted ideas.	

Scale 1–5: Disagree - Agree

Appendix D: Compilation answer survey

In this appendix the compiled answers from the survey is compiled. The answers refer to the questions about the Ideation Factors.

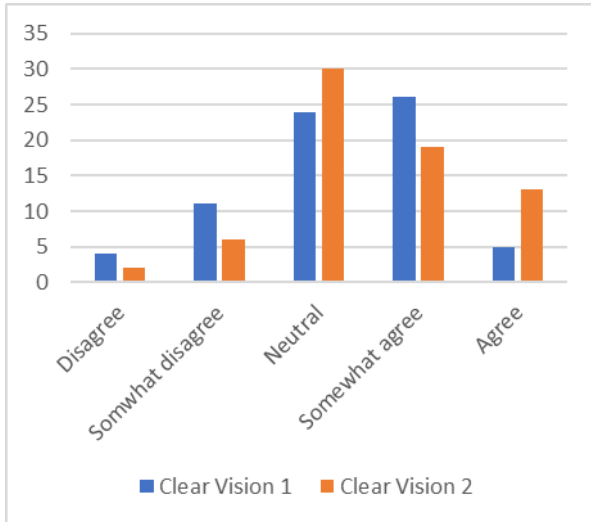


Figure 10: Answers relating to statements for Clear Vision

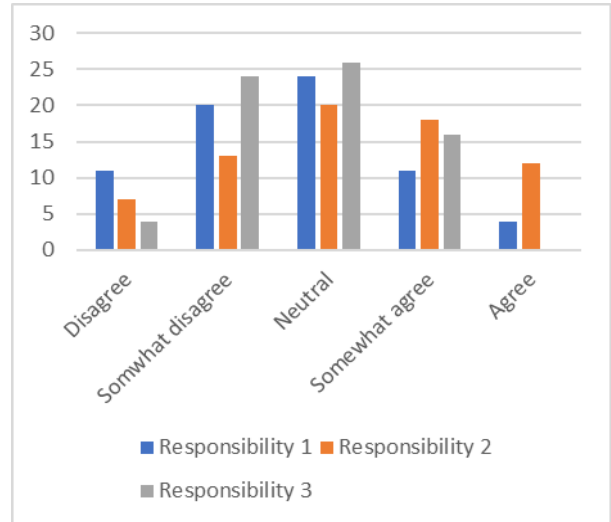


Figure 11: Answers for statements regarding Responsibility

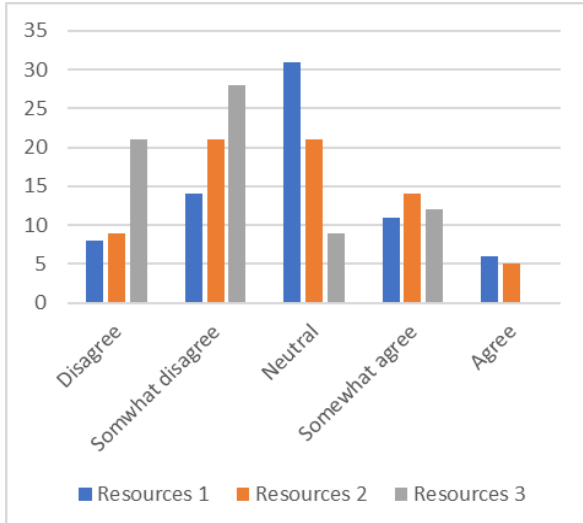


Figure 12: Answers for statements regarding Resources.

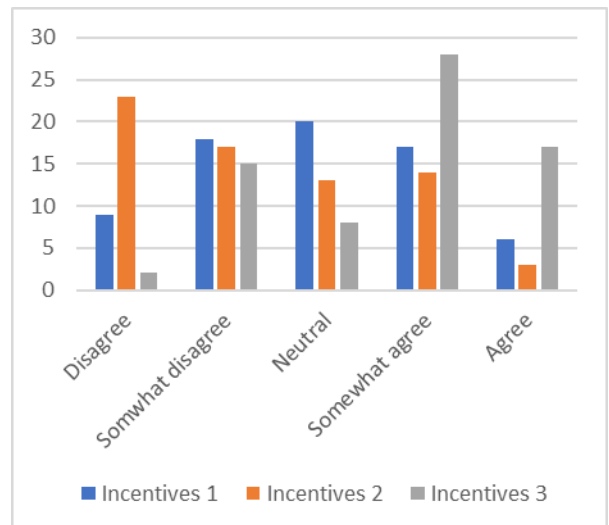


Figure 13: Answers for statements regarding Incentives.

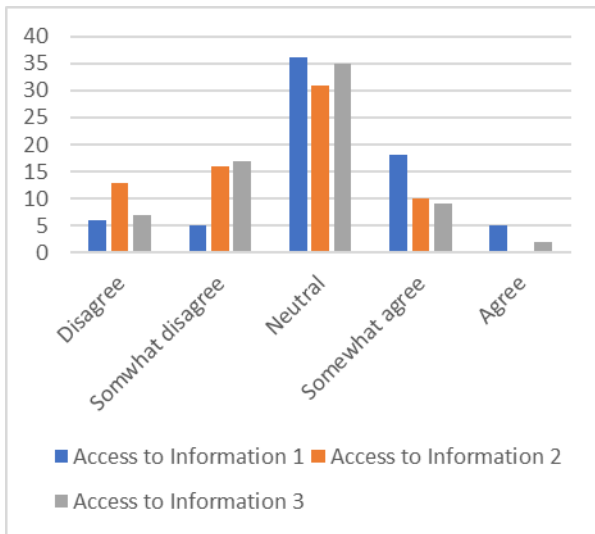


Figure 14: Answers for statements regarding Access to Information.

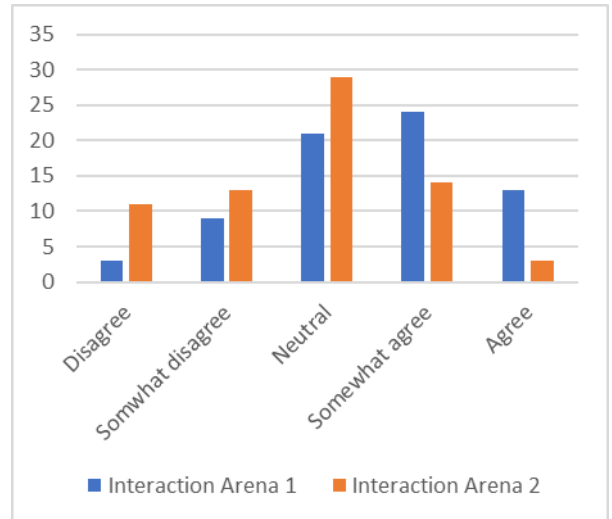


Figure 15: Answers for statements regarding Interaction Arena.

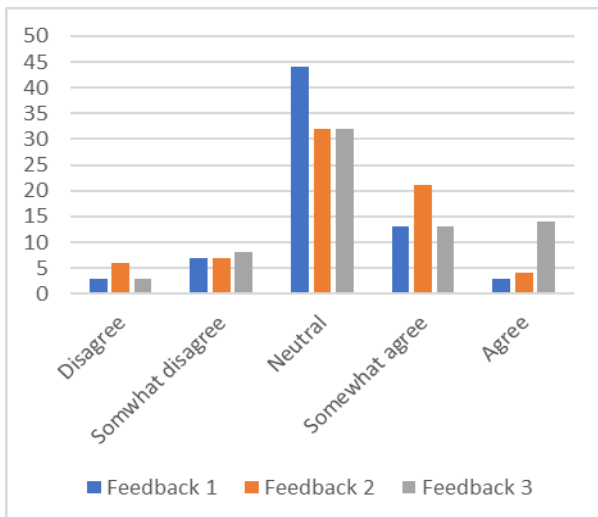


Figure 16: Answers for statements regarding Feedback.

Appendix E: ANOVA tables

In this appendix are the ANOVA tables from the regression analysis presented.

Test 1: Control and Ideation factors impact on Culture.

		ANOVA^a				
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7,325	3	2,442	6,136	,001 ^b
	Residual	26,261	66	,398		
	Total	33,586	69			
2	Regression	22,796	10	2,280	12,465	,000 ^c
	Residual	10,790	59	,183		
	Total	33,586	69			

a. Dependent Variable: Culture

b. Predictors: (Constant), Time at Company, Gender, Age

c. Predictors: (Constant), Time at Company, Gender, Age, Resources, Feedback, Incentives, Access to Information, Interaction Arena, Clear Vision, Responsibility

Test 2: Control, Ideation factors and Culture's impact on Ideation Effort

		ANOVA^a				
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2,738	3	,913	1,985	,125 ^b
	Residual	30,348	66	,460		
	Total	33,086	69			
2	Regression	13,141	10	1,314	3,887	,000 ^c
	Residual	19,945	59	,338		
	Total	33,086	69			
3	Regression	14,569	11	1,324	4,148	,000 ^d
	Residual	18,517	58	,319		
	Total	33,086	69			

a. Dependent Variable: Ideation Effort

b. Predictors: (Constant), Time at Company, Gender, Age

c. Predictors: (Constant), Time at Company, Gender, Age, Resources, Feedback, Incentives, Access to Information, Interaction Arena, Clear Vision, Responsibility

d. Predictors: (Constant), Time at Company, Gender, Age, Resources, Feedback, Incentives, Access to Information, Interaction Arena, Clear Vision, Responsibility, Culture

Test 3: Control, Ideation factors, Culture and Ideation Effort impact on Quantity of submitted ideas.

		ANOVA ^a				
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	572,401	3	190,800	8,103	,000 ^b
	Residual	1554,171	66	23,548		
	Total	2126,571	69			
2	Regression	898,130	10	89,813	4,314	,000 ^c
	Residual	1228,441	59	20,821		
	Total	2126,571	69			
3	Regression	986,567	11	89,688	4,563	,000 ^d
	Residual	1140,005	58	19,655		
	Total	2126,571	69			
4	Regression	1067,562	12	88,964	4,788	,000 ^e
	Residual	1059,009	57	18,579		
	Total	2126,571	69			

a. Dependent Variable: Quantity of submitted ideas

b. Predictors: (Constant), Time at Company, Gender, Age

c. Predictors: (Constant), Time at Company, Gender, Age, Resources, Feedback, Incentives, Access to Information, Interaction Arena, Clear Vision, Responsibility

d. Predictors: (Constant), Time at Company, Gender, Age, Resources, Feedback, Incentives, Access to Information, Interaction Arena, Clear Vision, Responsibility, Ideation Effort

e. Predictors: (Constant), Time at Company, Gender, Age, Resources, Feedback, Incentives, Access to Information, Interaction Arena, Clear Vision, Responsibility, Ideation Effort, Culture

Appendix F: Correlation analysis

In this appendix is the correlation analysis from the survey presented.

			1															
1	Gender	P	1	2														
2	Age	P	-,032	1	3													
3	Time at Company	P	-,075	,558**	1	4												
4	Clear Vision	P	-,055	,252*	,227	1	5											
5	Resources	P	-,047	,073	,084	,560**	1	6										
6	Responsibility	P	-,191	,212	,084	,557**	,530**	1	7									
7	Incentives	P	,190	-,191	-,268*	-,089	-,130	,016	1	8								
8	Access to Information	P	,070	,194	,089	,566**	,537**	,584**	-,105	1	9							
9	Feedback	P	-,206	-,031	,003	-,036	,208	,202	-,102	,206	1	10						
10	Interaction Arena	P	-,213	,143	,139	,272*	,266*	,545**	,200	,319**	,480**	1	11					
11	Culture	P	-,442**	-,063	,098	,320**	,551**	,524**	-,173	,267*	,530**	,418**	1	12				
12	Ideation Effort	P	-,230	-,139	-,141	,411**	,411**	,309**	,048	,283*	-,103	,026	,370**	1	13			
13	Quantity of submitted ideas	P	-,199	,107	,459**	,417**	,297*	,119	-,179	,199	,052	,145	,388**	,315**	1			
		N	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
**. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed). P= Pearson Correlation																		

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