THE IMPACT OF KNOWLEDGE MANAGEMENT CAPABILITIES ON INNOVATION CONTEST OUTCOMES

Master's Thesis

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Information and Service Management

Fall 2019

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Title of thesis The impact of knowledge management capabilities on innovation contest outcomes

Degree Master of Science in Economics and Business Administration

Degree programme Information and Service Management

Thesis advisor(s) Matti Rossi

Year of approval 2019   **Number of pages** 107   **Language** English

Abstract

The increasingly dynamic, global competitive environment and faster technological progress create pressure for organizations to improve their innovative performance. Open innovation activities such as innovation contests are challenging the view according to which innovation would be best managed inside the organization. Due to advancements in ICT, acquiring external knowledge is no longer the main challenge. The challenge is rather adopting and exploiting the acquired knowledge to create innovation. The purpose of this thesis is to study knowledge management capabilities that enable the exploitation of ideas acquired in an innovation contest. The theoretical framework in this thesis creates a novel link between the theory of absorptive capacity and the challenges identified in crowdsourcing and innovation contest literature by identifying three knowledge management gaps in the innovation contest process: between contest development and challenge set-up, between knowledge acquisition and evaluation & selection and between evaluation & selection and assimilation & transformation.

This research was conducted by qualitative semi-structured interviews with five organizations that have organized innovation contests and one innovation contest expert. The sample included private, public and non-profit organizations. The data was analyzed with thematic analysis to identify the key challenges and organizational capabilities based on the theoretical framework.

The findings suggest that the ability to understand organizational objectives and current capabilities and premises create the basis for implementing innovation contests. The capability of network building and contribution quality management enable reaching industry outsiders as participants and acquiring valuable knowledge that through processes for cross-functional knowledge sharing can be assimilated, further developed and exploited to improve innovative performance. Furthermore, internal and managerial commitment and open innovative culture are identified as enablers for initiating and maintaining open innovation activities in the long-term.

Besides requiring a set of knowledge management capabilities, organizing an innovation contest is also recognized to have the potential of improving the capabilities and the organization's innovative performance over time.

Keywords innovation, innovation contest, knowledge management, absorptive capacity

Tekijä Silja Suoheimo

Työn nimi The impact of knowledge management capabilities on innovation contest outcomes

Tutkinto Kauppatieteiden maisteri

Koulutusohjelma Tieto- ja palvelujohtaminen

Työn ohjaaja(t) Matti Rossi

Hyväksymisvuosi 2019 **Sivumäärä** 107 **Kieli** Englanti

Tiivistelmä

Jatkuvasti dynaamisempi kansainvälinen kilpailuympäristö ja teknologioiden lyhentyvät elinkaaret luovat organisaatioille painetta parantaa innovatiivista suorituskykyään. Avoimen innovoinnin menetelmät, kuten innovaatiokilpailut, haastavat käsitystä, jonka mukaan innovaatioita kannattaisi hallita vain organisaation sisällä. Tieto- ja viestintäteknologisen kehityksen ansiosta suurin haaste organisaatioille ei enää ole uuden tietämyksen hankinta, vaan tämän tietämyksen omaksuminen ja hyödyntäminen. Tämän tutkimuksen tarkoitus on saada ymmärrys organisaation tietämyksenhallinnan kyvykkyyksistä, jotka mahdollistavat innovaatiokilpailuissa kerättyjen ideoiden hyödyntämisen. Tutkimuksen teoreettinen viitekehys luo uudenlaisen yhteyden tiedon vastaanottokyvyn teorian sekä joukkoistamis- ja innovaatiokilpailukirjallisuudessa havaittujen haasteiden välille tunnistamalla kolme kuilua innovaatiokilpailuprosessissa.

Tutkimus on toteutettu kvalitatiivisilla puolistrukturoiduilla haastatteluilla viiden innovaatiokilpailun järjestäneen organisaation sekä yhden innovaatiokilpailuasiantuntijan kanssa. Tutkimuksessa haastateltiin sekä yrityksiä että julkisia ja voittoa tavoittelemattomia organisaatioita. Data analysoitiin teema-analyysillä tärkeimpien haasteiden ja kyvykkyyksien tunnistamiseksi.

Tutkimuksen tulosten mukaan organisaation tavoitteiden ja lähtökohtien ymmärrys luo pohjan innovaatiokilpailun käyttöönotolle. Kyky laajentaa verkostoja ja hallita kontribuutioiden laatua mahdollistaa toimialan ulkopuolisten osallistujien löytämisen ja sitä kautta arvokkaan uuden tietämyksen hankkimisen. Tätä tietämystä voidaan funktiorajat ylittävien tiedonjakamisprosessien avulla omaksua, jatkokehittää ja hyödyntää innovatiivisen suorituskyvyn parantamiseksi. Tutkimuksessa havaittiin myös, että avoimen innovaation toimenpiteiden aloittaminen sekä pidemmän aikavälin ylläpito vaativat organisaation sisäistä ja erityisesti johdon sitoutumista sekä avointa innovaatiokulttuuria.

Sen lisäksi, että innovaatiokilpailut edellyttävät organisaatioilta tietämyksenhallintakyvykkyyksiä, tämän tutkimuksen mukaan ne myös mahdollistavat näiden kyvykkyyksien kehittämisen ja sitä kautta paremman innovatiivisen suorituskyvyn tulevaisuudessa.

Avainsanat innovaatio, innovaatiokilpailu, tietämyksenhallinta, tiedon vastaanottokyky

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1 Introduction

The key source for competitive advantage is an organization's ability to create knowledge in the innovation process (Bierly, Damanpour & Santoro, 2009; Grant, 1996). There is an increasing pressure for organizations to decrease the innovation's time to market and simultaneously improve the hit rate. Open innovation has started to challenge the view according to which innovation would be best managed when kept completely inside the organization (Lampel, Jha & Bhalla, 2012). One popular method for open innovation are innovation contests, where organizations gather contributions to specific challenges in the form of a competition. Innovation contests rely on the open innovation theory and in the logic that a crowd can produce better outcomes compared to the firm's internal research and development activities completed by a much smaller group of people (Mortara, Ford & Jaeger, 2013).

Most of the previous literature discusses innovation contests from the perspective of contest design elements and managing activities during the contest (Bullinger & Moeslein, 2010; Piller & Walcher, 2006; Hjalmarsson, Juell-Skielse, Ayele, Rudmark & Johannesson, 2015; Armisen & Majchrzak, 2015) as well as participant motivation (Hjalmarsson, Johannesson, Juell-Skielse & Rudmark, 2014; Bullinger & Moeslein, 2010; Hjalmarsson et al., 2015; Mortara et al., 2013). Thus, the focus of innovation contest literature has strongly been on identifying challenges related to the adoption of innovation contests (Hjalmarsson et al., 2014) and on improving knowledge acquisition from external sources. However, in many organizations the challenge in open innovation today is not only idea acquisition from external stakeholders (Docherty, 2006), since advancements in information technology and especially the emergence of the Internet have enabled a wider reach to external knowledge sources (Piller & Walcher, 2006). The challenge is neither the adoption of an innovation contest to gain knowledge but adopting the ideas from the contests (Hjalmarsson et al., 2014). In a study by Hjalmarsson et al. (2014), less than 10% of the prototypes developed at the competitions were finalized and managed to attract the needed user base, indicating that the most significant challenges are utilizing the acquired ideas and integrating them into the innovation system.

The majority of knowledge can be found outside the organization due to a number of changes in the organizational environment, such as constantly shifting demands,

decreasing technology life cycles and the increasing number of knowledgeable suppliers and customers (Chesbrough, Vanhaverbeke & West, 2006). Knowledge management capabilities are therefore needed for recognizing the value of this knowledge and for exploiting it (Cohen & Levinthal, 1990).

1.1 Research problem and research questions

The aim of this thesis is to reflect the theories of knowledge management, dynamic capabilities and absorptive capacity to the open innovation theory and crowdsourcing literature through the perspective of innovation contests. The organizational challenges related to exploiting the ideas from an innovation contest are explored to understand why so many innovation contests do not lead to increased innovative performance.

The research questions are:

Which knowledge management capabilities an organization needs to exploit the ideas from an innovation contest?

  (1) What are the key challenges in knowledge management in the innovation contest process?
  (2) What is the role of absorptive capacity in these challenges?

The research has several managerial implications. Firstly, by bringing the challenges visible, the internal research and development function can be seen as a compliment instead of a substitute for open innovation activities. Secondly, by acknowledging the needed knowledge management capabilities, organizations can make conscious decisions about the optimal channels used for open innovation activities. Thirdly, the capabilities can also be reflected in the innovation contest design elements before, during and after the contest to support the innovation targets and an efficient integration of the ideas into the innovation system.

1.2 Structure of the thesis

This study is divided into six chapters. The first chapter has given an introduction to the subject of innovation contests and knowledge management capabilities. Next, previous literature and the theoretical background are introduced, including open innovation theory,

knowledge management theory and literature on innovation contests. In the end of chapter 2, the theoretical framework is built on the basis of the literature review. The third chapter is devoted to the research methodology, as well as the trustworthiness of the research. In the fourth chapter, findings are presented and analyzed. The fifth chapter discusses the findings and the final chapter covers the conclusions of the research as well as the academic and managerial implications.

2   Literature review

This literature review forms the background for the research by covering previous literature on the topic. The chapter is divided into four sections. The first section discusses the open innovation theory. The second section defines innovation contests and reflects the theory of open innovation to them. The third section covers the theory of knowledge management, and specifically views open innovation from the perspective of the theories of dynamic capabilities and absorptive capacity. Based on that, a conceptual framework for understanding knowledge management in innovation contests is created in the last section.

2.1   Open innovation theory

The key source for competitive advantage has been identified to be the organization's ability to innovate; to create knowledge in the innovation process (Bierly et al., 2009; Grant, 1996). Innovation in this thesis is defined relatively broadly as a "new match between a need and a solution" as also defined by Terwiesch & Ulrich (2009, pp. 3). The increasingly dynamic, global competitive environment is leading towards faster technological progress and constantly decreasing product life cycles, making the ability to innovate ever more critical to remain competitive (Mortara et al., 2013). Simultaneously, a common challenge appearing in literature is that organizations often lack innovativity (Hjalmarsson et al., 2014; Hjalmarsson et al., 2015).

In recent years, organizations have realized that internal knowledge creation alone is no longer sufficient for innovative performance. As said by Chesbrough (2003, pp. xxvi), "Not all of the smart people work for us. We need to work with smart people inside *and* outside our company". Most of new knowledge is being produced outside an organization due to the many complexities of, for instance, internal research and development, decreasing technology life cycles, growing number of informed suppliers and customers as well as increasing mobility of skilled people (Chesbrough, 2003; Chesbrough et al., 2006). These external sources have in many instances proven to produce high-quality results (Chesbrough et al., 2006; Laursen & Salter, 2006), especially when compared to innovations kept tightly within the boundaries of the organization (Lampel et al., 2012). Open innovation and crowdsourcing have thus started to challenge the view according to which innovation would be best managed when kept completely inside the organization.

In this section, the theory of open innovation is discussed, since it forms the basis for the literature on crowdsourcing as well as innovation contests. In the first subsection, open innovation model is defined and compared to the more traditional, closed innovation model. The second subsection discusses crowdsourcing and its integration into the organization's innovation system.

2.1.1 Defining open innovation

To see the innovation challenges related to the change in the environment towards faster innovation life cycles, we can first compare the activities between a closed and an open innovation model. As defined by Chesbrough et al. (2006), in the closed innovation model, projects are started in-house, using internal science and research resources. The inputs for the projects come from internal and some limited external sources that ranging from marketing ideas to gathering marketplace information or customer inputs (Cooper, 2008; Docherty, 2006). A subset of the started innovation projects will then be further developed by the organization's internal research and development (R&D) function (Docherty, 2006). From those developed projects a few will finally be taken to market (Chesbrough et al., 2006). According to previous literature, the closedness of this model refers to three attributes. Firstly, the ideas enter the process only in the beginning and exit only in one way in the end by going to market (Chesbrough et al., 2006). Secondly, the internal R&D department is responsible for further development of the project ideas (Docherty, 2006). Lastly, the focus of the activities is only on internal commercialization (Docherty, 2006).

Open innovation, in turn, can generally be defined as "the purposive inflows and outflows of knowledge to accelerate internal innovation and expand the markets for external use of innovation, respectively" (Chesbrough et al., 2006, pp. 1). There are multiple channels in the open innovation model for innovations to be sourced from: both internal and external (Chesbrough et al., 2006). The key difference to the closed model is, however, that the innovations can be sourced from different stakeholders throughout the development funnel, which makes the process more dynamic and less linear (Docherty, 2006). Nonetheless, it is important to recognize that open innovation is not only about the shift in knowledge acquisition, referred to as inbound open innovation, which the definition of Chesbrough et al. (2006) takes well into consideration. Their definition also demonstrates the outbound stage of open innovation, where there are many options compared to the closed model, such as licensing and spin-off ventures.

In comparison, West & Gallagher (2006) define open innovation more specifically by taking the knowledge inflows and knowledge utilization into consideration. They describe open innovation as fostering and exploring innovation opportunities from a variety of internal and external sources, integrating the opportunities with organizational capabilities, and exploiting the opportunities through several channels. In this definition, open innovation can also be clearly connected to the knowledge management theory that is discussed later on in this thesis, as it demonstrates the phases of knowledge exploration, integration and exploitation. This thesis will adopt the latter definition as it strongly supports the focus of this research.

Previous literature has recognized and divided the type of openness in open innovation into three categories: inside-out, outside-in and coupled openness (West & Gallagher, 2006; Remneland Wikhamn, 2013; Enkel, Gassmann & Chesbrough, 2009). In the inside-out approach, the initiator of open innovation enables external participants to use its own resources, such as open data, to develop new offerings without necessarily taking the organization's own objectives into consideration. In this approach, the organization usually has to procure or license the innovation developed by a third-party (Hjalmarsson et al., 2014; Enkel et al., 2009). In the outside-in approach, the organization initiating open innovation opens its borders to attract outside talent to contribute external ideas and technologies (West & Gallagher, 2006). The organization, however, reserves the right to select the ideas they wish to pursue (Hjalmarsson et al., 2014; Hjalmarsson, Smith & Burden, 2016). In the coupled approach the organization creates ongoing relations with external actors, and therefore this approach connects the inside-out and outside-in openness (Enkel et al., 2009; Remneland Wikhamn, 2013). This thesis views open innovation from the perspective of outside-in and coupled openness, where the primary focus is on gathering knowledge from external stakeholders.

There are many benefits of open innovation as identified by previous research on the topic. First of all, open innovation is considered to lower the innovation costs and risk of experimenting with new strategic growth opportunities thus expand the reach to new ideas (Docherty, 2006). Second of all, it has been acknowledged to free internal resources and enable focusing on discovering and assessing ideas and on the implementation, as well as to give an opportunity to develop a more innovative culture over time (Docherty, 2006). Furthermore, the emergence of internet technologies (Piller & Walcher, 2006) as well as social media (Hofstetter, Aryobsei & Herrmann, 2018) have enabled a direct channel for

organizations and their stakeholders to interact that no longer requires intermediaries such as market research companies (Piller & Walcher, 2006; Nambisan, 2002; Sawhney, Verona & Prandelli, 2005). Applying these online technologies has decreased the efforts and costs for involving users in solving problems and innovating solutions to the challenges shared by an organization even more (Piller & Walcher, 2006).

However, it is also acknowledged in literature that innovation search from external sources is not gratuitous but demands investments in time and workforce (Laursen & Salter, 2006) as well as knowledge management capabilities and routines (Blohm, Leimeister & Krcmar, 2013). These challenges will be further explored in this thesis from innovation contests' point of view.

2.1.2 Crowdsourcing in the innovation system

As the innovation process becomes more open, organizations create collaborative mechanisms to expand their knowledge base by integrating the contributions of different external stakeholders into the innovation process (Majchrzak & Malhotra, 2013; Kazadi, Lievens & Mahr, 2016). Crowdsourcing refers to the activities of outsourcing certain tasks to external stakeholders (Howe, 2006; Majchrzak & Malhotra, 2013). More specifically, crowdsourcing describes activities where the crowdsourcer, an organization initiating the process, presents a voluntary task as an open call for an undefined group of participants (Blohm et al., 2013) that contribute by sharing their knowledge with the crowdsourcer.

There are two types of crowdsourcing as discussed by Blohm et al. (2013) and Afuah & Tucci (2012): collaboration-based and tournament-based. In collaboration-based crowdsourcing self-selected participants work collectively to create a solution to the crowdsourcer's need. In tournament-based crowdsourcing, a variety of contributions are collected from participants and a winner is selected by the crowdsourcer in exchange for monetary or non-monetary compensation. Blohm et al. (2013) also discuss that the two types of crowdsourcing can be combined, for instance, by introducing collective selection of the best contributions into the tournaments, or by improving the quality of submissions by encouraging collaboration in the tournaments, for instance.

To understand the challenges in benefiting from crowdsourcing activities, crowdsourcing cannot be seen as a separate entity from the innovation system. The organization's innovation system describes how information accumulates and flows within

the system, from the start of the project until market launch (Risom Jespersen, 2018) and therefore can be considered critical for the success of crowdsourcing that aims at collecting and exploiting externally acquired knowledge. Crowdsourcing has been visualized as part of the innovation system by Risom Jespersen (2018), as illustrated in Figure 1.
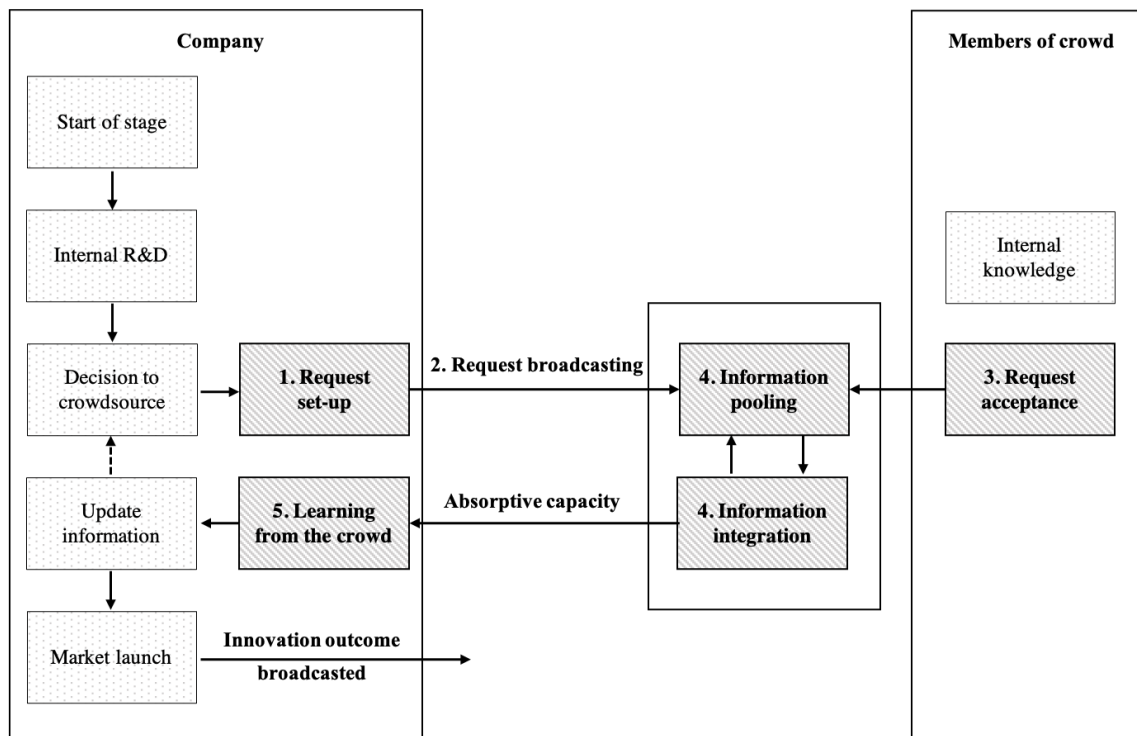
Figure 1. The integration of crowdsourcing in the innovation system (adapted from Risom Jespersen, 2018, pp. 54).

The innovation process always starts from internal R&D activities to which crowdsourcing can be included. When crowdsourcing is initiated, the organization first sets up a request based on the selected crowdsourcing design and governance structure. In the second phase, this request is broadcasted to the external audience: members of the crowd. If the members of the crowd accept the request in the third phase, resource sharing between the members and the organization begins as illustrated in the fourth phase. The fourth phase is a combination of information pooling, or acquisition, and information integration. As noted by Risom Jespersen (2018), during the fourth phase the organization will receive both usable and unusable information, and thus innovation opportunities. The fifth phase of learning from the crowd completed by the organization alone is therefore a critical determinant of success. The organization needs to synthesize the acquired information to minimize the cognitive distance between that information and the

organization's existing knowledge base to improve the integration of the acquired knowledge to the innovation system (Risom Jespersen, 2018). This phase is where the organization's knowledge management capabilities and specifically absorptive capacity, which will be discussed later on, plays a critical role.

The focus of this thesis is on the fifth phase: what kind of challenges the organizations face when integrating externally sourced knowledge to its innovation system. However, as can be seen from the figure, all the preceding phases of request set-up, request broadcasting, request acceptance and information pooling and integration impact the success of learning from the crowd. Therefore, the challenges related to all of these five phases will be explored.

2.2 Innovation contest

Internet has been recognized by numerous researchers to be the key driver for open innovation and has provided organizations with a channel for rich communication with external audiences (Piller & Walcher, 2006; Hjalmarsson et al., 2014; Bullinger & Moeslein, 2010, Hutter, Hautz, Füller, Mueller & Matzler, 2011). Simultaneously, it has given external stakeholders access to information that used to reside within organizations and motivated them to create solutions to problems not yet addressed by organizations (Piller & Walcher, 2006).

These developments have led to web-based toolkits for user innovation and co-design that decrease the effort needed from users to co-create and communicate solutions to an organization's challenges (Piller & Walcher, 2006). According to Piller & Walcher (2006) there are two types of toolkits: toolkits that give the organization access to need information, and toolkits that give access to solution information. Toolkits that give access to need information provide users with the innovation capabilities of the organization, and a platform to design novel offerings and get immediate feedback. Toolkits that give access to solution information mainly provide a channel for users to transfer ideas to the organization. Besides creating a platform for interaction, these latter toolkits also provide them with features for giving feedback and learning-by-doing, even if in a more indirect way (Piller & Walcher, 2006).

Innovation contests are a more novel toolkit for user innovation, providing organizations with a way to access external stakeholders' innovative ideas (Piller & Walcher, 2006). As mentioned for open innovation in general, the advancements in information and communication technology (Lampel et al., 2012), have dramatically increased the deployment of innovation contests by also allowing online competitions through virtual platforms (Bullinger & Moeslein, 2010; Hutter et al., 2011).

This section is divided into three subsections and discusses the innovation contest by taking into account the previously mentioned four phases of crowdsourcing: request set-up, request broadcasting, request acceptance, and information pooling and integration. First, the term innovation contest will be defined. Then, the organizational motivators for setting up the request, in this context the innovation contest challenge, as well as the participant motivators for accepting that request and taking part in the contests will be discussed. Lastly, the design elements of the innovation contests will be explored to understand the impact of request design on the information pooling and integration.

The next subchapter of knowledge management theory will then discuss the fifth phase of the crowdsourcing process: learning from the crowd as well as the role of absorptive capacity in that phase.

2.2.1 Defining innovation contest

Innovation contests (Bullinger & Moeslein, 2010; Lampel et al., 2012), in literature also referred to as open innovation challenges, innovation tournaments (Armisen & Majchrzak, 2015), design competitions (Lampel et al., 2012), idea competitions (Hjalmarsson et al., 2014), idea contests (Piller & Walcher, 2006), research tournaments (Fullerton, Linster, McKee & Slate, 1999) and tournaments for ideas (Morgan & Wang, 2010), are a form of open innovation that facilitates knowledge generation and sharing between the organizer and participants, as well as among participants (Armisen & Majchrzak, 2015). Ever since the Industrial Revolution, open innovation contests have had a significant impact on the economic growth of nations (Fullerton et al., 1999). The contests have now become a way to boost creativity beyond the organizational boundaries and to accelerate the development of new ideas (Hjalmarsson et al., 2014; Hjalmarsson et al., 2016) by supporting the acquisition of external inputs and knowledge and the integration of the knowledge into different stages of the innovation funnel (Mortara et al., 2013).

Innovation contests do not have one established definition. In this research, the definition is adapted and synthesized from the definitions of previous studies to provide a comprehensive view of the concept. Innovation contests are defined as web-based competitive environments (Bullinger & Moeslein, 2010; Terwiesch & Ulrich, 2009) in which consumers compete with each other for monetary rewards or other benefits (Lampel et al., 2012) by submitting innovative solutions to a challenge provided by the contest organizer, in a limited time period (Piller & Walcher, 2006; Juell-Skielse, Hjalmarsson, Juell-Skielse, Johannesson & Rudmark, 2014). The contributor of the best idea will usually be given a prize in exchange for the right to use that idea (Mortara et al., 2013). Whereas Terwiesch & Ulrich (2009) define innovation tournaments as consisting of multiple rounds of competition, in this thesis innovation contest is considered to consist of only one round.

Innovation contests rely on the previous mentioned underlying logic of open innovation and crowdsourcing: that collective intelligence of a crowd produces better outcomes compared to a small group of people (Mortara et al., 2013). However, previous literature has different views on the types of openness relevant for innovation contests. Whereas Remneland Wikhamn (2013) states that outside-in or coupled form of openness are relevant, Hjalmarsson et al. (2014) argue inside-out and coupled openness play the key role.

Based on these articles, it is clear that the form and objectives of the competition affect the type of openness. If the organization expects prototypes or other concrete contributions, it is required that it also shares more information and resources with the participants, enabling them to create the prototypes, which would be supported by inside-out openness. This is often the case in innovation or design tournaments with several rounds, or in open data development contests, which give more control to the participants. However, if the contest aims at reaching innovative ideas but does not look for concrete solutions, outside-in openness is more relevant.

As argued earlier, this thesis focuses on the outside-in and coupled approaches. The objective is not to explore how organizational knowledge is shared outside, but how external knowledge sources are used to generate ideas for the organization and how external knowledge is combined with existing internal organizational knowledge.

Despite the long history of innovation contests and the large attention they have gained both in practice and in academia, the research has so far mainly focused on the

contest activity itself, including the design elements of the competitions (Bullinger & Moeslein, 2010; Piller & Walcher, 2006; Hjalmarsson, Juell-Skielse, Ayele, Rudmark & Johannesson, 2015; Hutter et al., 2011) and the challenges related to participant motivation (Piller & Walcher, 2006; Mortara et al., 2013; Füller, 2006; Lampel et al., 2012) as discussed earlier. Yet, there is limited research on what the actual outcomes are dependent on, in which contexts innovation contests are a good method for enhancing innovation performance or what kind of outcomes the winning ideas provide after the competition ends.

2.2.2 Organizer and participant motivation

In this subsection, the motivation for both contest organizers as well as contest participants are discussed based on previous literature. Acknowledging the possible motivators for each side is crucial for understanding the expectations and objectives for taking part in an innovation contest, being able to choose the most optimal design elements for the contest as well as ensuring the organization has the needed knowledge management capabilities to succeed.

This subsection is divided into two parts. In the first part, the motivation of organizations is discussed, and the second part focuses on the motivation of participants.

2.2.2.1 Organizational motivation

As discussed by Risom Jespersen (2018), an organization needs a crowdsourcing design purpose that states why the crowd's assistance is needed in the innovation process, when deciding whether or not to use crowdsourcing as part of the innovation system. According to their article, crowdsourcing can be used in three stages of the innovation process: intelligence, design and choice. The stage of the innovation process is directly linked to and affects the crowdsourcing design purpose. In the intelligence stage the objective of acquiring inputs from the crowd is to improve the richness of information possessed by the organization. In the design stage, the members of the crowd become co-creators as the organization's purpose is to seek for prototypes or physical designs. Lastly, in the choice stage, the crowd is utilized for the purpose of testing an innovation activity by evaluating, selecting or voting. In spite of that, as described earlier in the innovation contest definition and as stated by Mortara et al. (2013), the main organizational objective for an innovation contest is typically the acquisition of new business, product or key technology ideas. This

suggests that innovation contests are primarily utilized in the intelligence stage of the innovation process, and that the main purpose is to improve the richness of the organization's knowledge base.

Besides the stage of the innovation process, there are several other factors affecting the motivators to set up an innovation contest, including the organization type, the external environment and organizational capabilities (Lampel et al., 2012; Laursen & Salter, 2006). Firstly, depending on the organization type, its mission and its values, the main targets of the contests vary (Lampel et al., 2012). Whereas corporations tend to be driven by commercial objectives (Mortara et al., 2013) and aim at creating private good (Lampel et al., 2012; McCann & Mudambi, 2005), foundations aim at public good (Lampel et al., 2012). Thirdly, there are mixed-good contests where both private and public goods are created simultaneously (Lampel et al., 2012).

Secondly, besides the organization type, the external competitive environment has also been argued to have an impact on determining the required external knowledge search efforts. In industries that heavily invest in external search for knowledge, there is a bigger challenge to find critical knowledge sources, which demands more resources compared to industries where the main knowledge sources are primarily internal (Laursen & Salter, 2006). This would suggest that the motivation to set up an innovation contest would be higher in industries more dependent on external knowledge.

Thirdly, as discussed by Lampel et al. (2012), the organizational motivation for innovation contests depend on the organizational capabilities as well as resources and can be considered as a continuum between narrow and broad innovation agendas. According to their study, an organization often relies on narrowly focused innovation agendas when it is lacking administrative flexibility as well as the needed resources for innovating new products and services to respond to business problems. These organizations tend to design innovation contests with tightly defined tasks. In these narrow innovation agendas, the aim is often to decrease the costs of developing innovations. On the other end of the continuum are the broad innovation agendas with more complex targets that aim to reshape current social, economic or technological environments, or accelerate market development. These broad agendas are not only limited to markets that already exist but can aim for developing a completely new one. An organization may have identified a non-existing yet potential market, or a market that should evolve towards another direction, and aim to remove the bottlenecks slowing further development by designing an innovation contest (Lampel et

al., 2012). Lastly, the innovation agendas may evolve and change over time. An innovation contest that was first aiming at narrow goals can become broader over time when bigger targets are identified along the way (Lampel et al., 2012).

Among the above-mentioned motivators, previous literature on innovation contests recognizes several secondary objectives for participation, even if the primary goal is innovation related (Mortara et al., 2013). This includes getting publicity by PR activities, building brand communities and "buzz" around products and generating brand awareness and marketing intelligence to understand what people think about the organization (Hofstetter et al., 2018; Mortara et al., 2013). Additionally, organizations may want to gain technology and competitor intelligence to validate internal projects and investments (Mortara et al., 2013). Interestingly, attracting skilled people in design contests with unique challenges is also a motivator for organizations since it offers a way to identify, develop (Lampel et al., 2012) and test the people skills of new talent to be hired in the future (Mortara et al., 2013). Particularly in businesses working in environments that require identifying top performers in order to make quick progress, this method can be valuable (Lampel et al., 2012).

Nonetheless, it is important to lastly acknowledge what Piller and Walcher (2006) have argued: many contests seem to lack actual innovation agendas in the first place and rather appear as a marketing method to boost the relationship between the organization's brand and its customers.

2.2.2.2 Participant motivation

When organizations open their innovation process, incentivizing external stakeholders to share their ideas forms a substantial challenge (Piller & Walcher, 2006; Füller, 2006). Simultaneously it is a key phase in an innovation system utilizing crowdsourcing as discussed earlier (Risom Jespersen, 2018). Research has recognized that external stakeholders, such as users, are often listened to, but not actively taken into the innovation process (Piller & Walcher, 2006). Organizations have previously tried to capture the innovations created as a result of users' own, active problem-solving activities (Piller & Walcher, 2006). However, organizations have started to take on a more active role and initiate interactions between external stakeholders to capture innovation (Piller & Walcher, 2006).

Participant motivation to take part in innovation contests has been researched widely and several motivations have been recognized among literature on crowdsourcing, innovation contests and virtual new product development. Firstly, research on motivation divides motivation into intrinsic and extrinsic, which has also been discussed in crowdsourcing and innovation contest research (Füller, 2006). Participants, who consider their contribution to the task fun, interesting and challenging, and enjoy the activity itself instead of the outcome, are intrinsically motivated (Füller, 2006). Intrinsic motivation may also include reputation, self-realization and positive feedback among the community (Füller, 2006). Furthermore, intrinsically motivated participants may want to test their skills, meet potential investors or customers, learn from other participants and participating experts or relieve curiosity (Lampel et al., 2012; Füller, 2006). Some participants, however, are extrinsically motivated, meaning that they are focused on the outcomes instead of the activities (Füller, 2006). The outcomes may be the monetary or non-monetary rewards, or prizes that can be money or valuable goods that are offered by the organizer (Piller & Walcher, 2006; Lampel et al., 2012).

Secondly, as stated by Piller and Walcher (2006), the focus and target of the innovation contest affect the motivators it offers. When the innovation contest aims at providing the organization with need information and offering participants the tools to design solutions, it often attracts participants that are extrinsically motivated by getting their solution produced for them (Piller & Walcher, 2006). On the other hand, if the contest aims at getting access to solution information, the process of seeing the results from participation is not as straightforward as with the first type of innovation contests. The participants will benefit from sharing their ideas only much later, if at all (Piller & Walcher, 2006). In these cases, the organizers of innovation contests are in many cases offering monetary rewards or licensing contracts or giving non-monetary acknowledgements as well as facilitating a pride-of-authorship effect to attract participants (Piller & Walcher, 2006).

An innovation contest usually does not only rely on providing only one type of motivation but creates a pack of value by combining different elements from prizes to technical support, marketing advice and facilities, for instance (Lampel et al., 2012). Therefore, the effects of different motivational factors on each other should be considered. As acknowledged by Füller (2006), there are extrinsic motivators that reinforce intrinsic motivation, as well as factors that are counterproductive and weaken intrinsic motivation.

Providing rewards can either provide positive results by encouraging intrinsically motivated participants or attract participants with low levels of interest in the topic (Füller, 2006). The latter could be detrimental for the results of the contest as it could lead to decreasing quality of contributions (Füller, 2006).

Lastly, participant motivation can evolve over time. Intrinsically motivated participants in the beginning may end up wanting to gain more economic benefits from the contributions (Füller, 2006). They may even stop sharing their knowledge with the organization if they consider their contributions have not been properly compensated for. This poses challenges when designing and managing the contest, as will be discussed next.

2.2.3 Contest design elements

The organizational and participant objectives of an innovation contest determine the optimal design of the contest, both the crowdsourcing request set-up and government mechanisms. As discussed earlier, the request set-up, in turn, affects the quality of inputs in the innovation contest and therefore the organization's ability to learn from the crowd. Therefore, finding an optimal design for the innovation contest is a prerequisite for effective integration and utilization of the inputs in the innovation system.

Lampel et al. (2012) have argued that translating the innovation objectives and plans into an innovation contest requires an organizational framework, consisting of the processes that are going to take place. The organizational framework for innovation contests consists of the architecture of the design competition (Lampel et al., 2012) including all the key design elements (Bullinger & Moeslein, 2010), as well as the governance system that determines the rules of the contest and the way it will be judged and concluded (Lampel et al., 2012).

Bullinger and Moeslein (2010) and Piller and Walcher (2006) have identified ten main design elements in innovation contests, presented in Table 1.

Table 1: Innovation contest design elements (Adapted from Bullinger & Moeslein, 2010)

DESIGN ELEMENT	ALTERNATIVES				
Organizer	INDIVIDUAL	PUBLIC	COMPANY	NON-PROFIT	INTERMEDIARY
Media	ONLINE		OFFLINE		MIXED
Task specificity	LOW		DEFINED		HIGH
Degree of elaboration	IDEA	SKETCH	CONCEPT	PROTOTYPE	SOLUTIO / EVOLVING
Target group	UNSPECIFIED / OPEN		SPECIFIED / CLOSED		
Contest period	VERY SHORT	SHORT TERM	LONG TERM	VERY LONG	ONGOING
Evaluation	JURY	PEER-TO-PEER	SELF-ASSESSMENT	COMBINED	
Participation	INDIVIDUAL		TEAM		MIXED
Community	ENABLED		NOT ENABLED		
Reward system	MONETARY		NON-MONETARY		MIXED

Next, these design elements are discussed in more detail. The aim is to identify the connections between the ten design elements and the organization's innovation objectives, as well as the effects of the design elements on the organization's ability to learn from the crowd.

The *organizers* of innovation contests range all the way from individuals to public organizations, and from companies to non-profit organizations (Bullinger & Moeslein, 2010; Piller & Walcher, 2006). What Bullinger & Moeslein (2010) and Piller & Walcher (2006) have not discussed are external innovation intermediaries that can also facilitate the innovation contests for the organization and assist in various stages of the innovation process (Sieg, Wallin & von Krogh, 2010). As discussed earlier, the type of organization strongly affects the innovation objectives set for the contest. Even though the organizer of the contest could be argued to hardly be a design element or a decision to be made to develop the contest, previous literature indicates that the type of organizer influences the other design elements of the innovation contests through innovation objectives.

Media refers to the environment in which the contest in organized. It can be online, offline or mixed (Bullinger & Moeslein, 2010). Media determines boundaries for many other design elements, such as the target group, the degree of elaboration of the inputs and the community functionality. Whereas online environment offers a possibility to reach

wider audiences, it has limitations in the types of inputs and community functionality that, in turn, are strongly supported in offline settings.

Task specificity describes how wide the solution space is, and ranges from low to defined and high. It could be argued that task specificity should ideally reflect the organization's innovation agenda and capabilities. If the innovation agenda is narrow or if the organization lacks resources or capabilities, the objective is often to find solutions to a specific problem as discussed earlier. This indicates that task specificity should be high. On the other hand, if the innovation agenda is broad and if the organization has the needed capabilities to utilize more disruptive contributions from the participants, a defined task would not allow the participants to explore and submit more complex inputs. This indicates that the task specificity should be low. However, as discussed earlier, the tasks set in an innovation contest may be very tightly defined and narrow in the beginning, as are the stated goals of the whole contest (Lampel et al., 2012). As the competition goes forward, more ambitious possibilities may be identified, which changes the objectives. Since organizational goals evolve over time, it poses challenges in aligning organizational and participant motivation during the contest (Lampel et al., 2012).

Degree of elaboration refers to the level of inputs the organization is looking for, and the alternatives include an idea, sketch, concept, prototype, solution or evolving solution that gets refined during the contest (Bullinger & Moeslein, 2010). The stage in which innovation contest is integrated into the innovation system is likely to determine the optimal degree of elaboration of the inputs. In the intelligence stage the aim is to increase the existing organizational knowledge base by ideas, sketches or concepts, whereas in the design phase the aim is to look for concrete solutions such as prototypes.

Target group determines whether the organizer is looking for a specified or unspecified group of participants (Bullinger & Moeslein, 2010). On the other hand, target group can also be categorized into two broad categories, open or closed, as discussed by Terwiesch & Ulrich (2009). Open contests are available for anyone to participate and are often organized by public or nonprofit organizations. Closed innovation contests, in turn, allow only employees to identify opportunities and the firms keep the ownership of the contributions. Both the objectives and the media can be argued to have an impact on the type of target group. The target group should reflect the complexity of the inputs sought, since selecting a relevant target group impacts the quality and usability of inputs, which in

turn would indicate that it affects the organization's ability to learn from the crowd. Media sets boundaries to the size of the target group, and to the ways the request is broadcasted.

Contest period determines how long the participation time of the contest will be, and ranges from very short term, varying between hours and a couple weeks - to very long term, over 4 months or ongoing (Bullinger & Moeslein, 2010). When looking at the different innovation agendas and organizational motivators, it can be argued that a more complex challenge requires a longer contest period. Additionally, a narrower target group could also indicate that there is a need for a longer contest period to be able to gather enough contributions, whereas for a large target group the contest period should be shorter to avoid gathering too many inputs. Since the current innovation contests are not only limited to one single period but can last for a longer time or even be a permanent, on-going process in an organization, it gives the organizers a better opportunity to learn during the competition and improve it (Lampel et al., 2012). This shift in the duration of the contests also helps the organizations to align the participant motivations with the objectives of the competition and the organization's innovation targets (Lampel et al., 2012).

Evaluation refers to the idea assessment and selection method, that include expert jury evaluation, peer review by other participants, self-assessment by the participants themselves and a combination of these three (Bullinger & Moeslein, 2010). The method for evaluation affects the quality of the inputs that move forward in the innovation system, and therefore the organization's ability to learn from the crowd. For instance, peer-assessment has been criticized as the votes may be biased towards more disruptive, minority ideas that could be what the organization is looking for, depending on the task specificity (Lampel et al., 2012).

Participation design element describes the way participants are organized when taking part in the innovation contest, and varies between individual, team and a mix of both (Bullinger & Moeslein, 2010). *Community functionality* describes whether communication tools are given and interaction between participants is enabled, or not (Bullinger & Moeslein, 2010). On the other hand, Lampel et al. (2012) argue that the competitive orientation in an innovation contest is not black and white, but rather a continuum where organizations balance between the two extremes: contests that encourage winning and contests that encourage collaboration. Both participation and community functionality could be argued to affect participant motivation. Participants who are intrinsically motivated may seek for opportunities to give and receive feedback and learn

from the participation process as well as from other participants. On the contrary, participants who are extrinsically motivated may be more competitive and lean towards participating individually as they are focused on the external motivators. Furthermore, the degree of elaboration is likely to affect participation, since it determines the workload and required skill level to make a contribution.

Reward system refers to the incentives used to motivate participation: monetary, non-monetary or mixed (Bullinger & Moeslein, 2010). As discussed earlier, it determines whether the selected target audience will accept the request broadcasted by the organizer of the innovation contest. Knowing the motivators of the target audience is therefore critical for the success of the innovation contest.

Based on the literature, the elements of organizer and media could be considered to determine the solution space for many of the design elements. The type of organizer impacts the overall motivators and objectives of the contest as well as the possessed capabilities, thus the decisions about the most optimal design. Media, in turn, sets limits to many of the contest features, including contribution types, audience type and size, as well as community functionality. Additionally, three design elements seem to be crucial for attracting the relevant members of the crowd in the innovation contest: participation, community functionality and reward system are crucial especially in attracting the relevant members of the crowd in the innovation contest. Lastly, five of the design elements seem to have a stronger focus on determining the quality of contributions and the organization's ability to learn from them: task specificity, degree of elaboration, target group, contest period and evaluation.

Whereas Bullinger and Moeslein (2010) focus on the design elements of the activities during the innovation contest, also pre-contest and post-contest design have been argued to play an important role in determining the outcomes of the contest. Pre-contest design includes deciding the overall aim of the innovation contest, identifying the key target audience, determining the impact the organizer wants to achieve and making the needed resources available (Juell-Skielse et al., 2014) and is thus crucial for making the most optimal contest design decisions. Pre-contest design also determines how the organizer will perceive the actual outcome of the contest. Secondly, the organizers of innovation contests should decide the level of post-contest support (Juell-Skielse et al., 2014). The organization may decide to take over the ownership of ideas or prototypes to provide it to their customers (Juell-Skielse et al., 2014), or support the participants in

developing the ideas further in cooperation. The support varies from a high level that requires a systematic post-contest process, to a low level or no support, which releases the control of the open innovation process completely as the contest comes to an end (Juell-Skielse et al., 2014).

As discussed in this section, the motivators of both the organizer of the contest and the members of the crowd or the participants, affect the success of the innovation contest. Contest design affects the organization's ability to acquire knowledge to the right problem by reaching the relevant audience with relevant knowledge. Furthermore, the ability to capture relevant knowledge affects the organization's ability to integrate this external knowledge and to learn from the crowd. Yet, on top of the design elements, also the organization's internal capabilities have been proven to affect its ability to acquire and integrate external knowledge in the innovation system, which will be discussed next.

2.3 Knowledge management theory

To understand the challenges related to managing externally acquired knowledge in the innovation contest process, it is important to understand organizational knowledge management in the context of open innovation.

This section has two subsections that discuss the knowledge management theory in relation to the open innovation theory. The first subsection defines the importance of knowledge management in open innovation. In the second subsection, the theories of dynamic capabilities and absorptive capacity are defined.

2.3.1   Knowledge management in open innovation

Knowledge management describes the process of identifying, selecting, organizing, disseminating and transferring information and expertise inside an organization (Gupta, Iyer & Aronson, 2000). Organizations are realizing the untapped potential around knowledge, and knowledge management is seen as the enabler for many activities increasing innovative performance, such as problem solving, decision-making, strategic planning and learning (Gupta et al., 2000).

Knowledge is a fundamental asset in helping organizations produce creative offerings (Gupta et al., 2000). In business literature, knowledge has not got one clear definition, but what is commonly understood is that knowledge is complex. It has been described broadly as an equivalent to information or data (Land, 2009) or, for instance, as "... a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information…" (Davenport & Prusak, 1998, pp. 5). Demarest (1997) also emphasizes that there is a key difference between knowledge and commercial knowledge. Whereas knowledge generally aims for being the truth, 'what is right', commercial knowledge aims at effective performance, that is 'what works' (Demarest, 1997, pp. 375).

Knowledge can also be conceptualized as explicit knowledge, tacit knowledge (Land, 2009; Gupta et al., 2000; Polanyi, 1983) and shared knowledge (Demarest, 1997). Explicit knowledge is in a documented, accessible form, and is often more objective and rational (Gupta et al., 2000). Tacit knowledge, on the other hand, is held by an individual (Demarest, 1997) and difficult to put into words as it usually consists of subjective, cognitive and experiential learnings (Gupta et al., 2000). Demarest (1997) has also argued that that tacit knowledge should not be considered knowledge at all, since knowledge only exists in a practicing network. Lastly, shared knowledge is possessed by a group, but not formally encoded like explicit knowledge (Demarest, 1997).

The key link between knowledge management and increased business performance is innovation (Demarest, 1997). According to the same study, the question in today's business environment is no longer 'will we innovate' but will innovation be fast, often and efficient enough (pp. 382). When the opportunity windows at markets are increasingly brief, organizations face growing time-based competition, and therefore reaching the optimal concept-to-cash-flow cycle time, referring to the time from the identification of an opportunity to the delivery, is imperative (Demarest, 1997).

External sources of knowledge are vital for an organization's innovation process (Cohen & Levinthal, 1990) and performance (Chesbrough et al., 2006). At the core of open innovation lies the organization's capability to use the new ideas and knowledge in their innovation processes (Laursen & Salter, 2006). In order to effectively utilize outside knowledge, knowledge management capabilities are needed for recognizing the value of this knowledge and for exploiting it (Cohen & Levinthal, 1990).

As pointed out by Gupta et al. (2000), most organizations already have vast amounts of knowledge, and according to Demarest (1997) all organizations produce and use it whether they acknowledge it or not. Therefore, all organizations have knowledge economies operating within them (Demarest, 1997). It is clear that the challenge for organizations is not the construction of knowledge (Demarest, 1997). Instead, what they are lacking is the ability to value that knowledge (Demarest, 1997), as well as recognize, access and diffuse that knowledge (Gupta et al., 2000). However, idea generation, transforming initial innovations into feasible offerings and adopting innovations is considered challenging due to innovation barriers such as high costs, lack of knowledge, organization structure and culture, strategy as well as regulation (Hjalmarsson et al., 2014). These challenges are further explored in this thesis.

2.3.2   Dynamic capabilities and absorptive capacity in open innovation

To be innovative, organizations have to leverage old, prior knowledge to create something new (Cohen & Levinthal, 1990). However, when new information comes from outside the organizational and technological boundaries, firms often face obstacles to recognize, assimilate, transform as well as exploit that information (Kim, Kim & Foss, 2016). Because of these challenges that also relate to open innovation and crowdsourcing, organizations need to build capabilities to utilize external information. In this research, the challenges are viewed through the theories of dynamic capabilities and absorptive capacity, since these theories describe the organizational capabilities needed to gain value from knowledge and use it to adjust to changing environments.

Dynamic capabilities refer to the organization's ability to integrate, create and re-configure resources as well as internal and external competences that enable adjusting to rapidly changing environments (Teece, 2007). The theory of dynamic capabilities explains why the resource-based view that sees organizations as a sum of its resources fails to rationalize the diverse performance of organizations with exactly the same resources. The dynamic capabilities of an organization can be divided into three activities: sensing, seizing and transforming (Teece, 2007). *Sensing* describes how the organization explores new opportunities. *Seizing* refers to developing these new ideas into innovations. *Transforming* means preparing for radical, external threats by renewing the organization.

Absorptive capacity (AC) is a dynamic capability embedded in organizational processes and routines, influencing the nature of an organization's competitive advantage (Zahra & George, 2002). Absorptive capacity discusses how an organization can acquire, assimilate, transform and exploit external information to commercial ends (Zahra & George, 2002; Cohen & Levinthal, 1990; Remneland Wikhamn, 2013). The following four dimensions of AC are combined dynamically (Zahra & George, 2002). *Acquisition,* or *value recognition* refers to the organization's capability to identify and gather knowledge generated outside the organization. *Assimilation* refers to the processes that enable the interpretation, understanding and analysis of the information as well as overall learning. *Transformation* describes how the organization can combine new externally sourced information with existing internal information, by for instance deleting and or re-interpreting the same knowledge in a different manner. Transformation capability enables the recognition of new opportunities and can even change the way the organization perceives itself and the current competitive environment. *Exploitation* describes the way external knowledge can be applied and incorporated to its existing operations to generate new competencies. However, this thesis does not aim to take all of the aspects of absorptive capacity into consideration but rather focus on the capabilities that enable innovation through open innovation and specifically innovation contests.

As stated earlier, AC in open innovation can be seen as an attention-directing and action-generating capability that allocates organizational attention and resources (Kim et al., 2016; Ocasio, 1997). To demonstrate the capabilities of directing attention and generating action, AC can be divided into potential absorptive capacity (PAC) and realized absorptive capacity (RAC) that are both needed in the open innovation process of an organization (Zahra & George, 2002; Kim et al., 2016). Figure 2 illustrates PAC and RAC in the open innovation process.
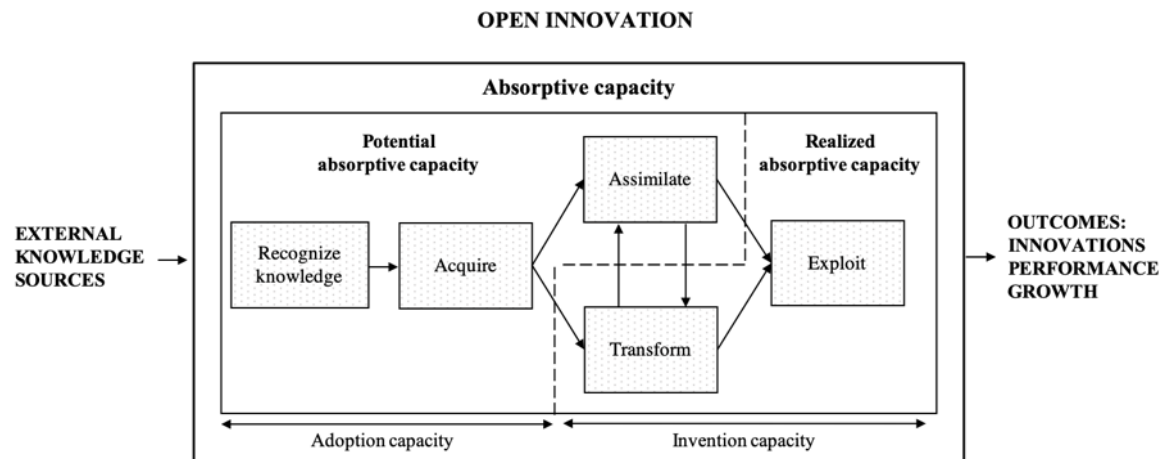
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Figure 2. The role of PAC and RAC in the open innovation process (adapted from Lis & Sudolska, 2015)

PAC refers to the recognition, acquisition and assimilation of external knowledge (Lis & Sudolska, 2015; Zahra & George, 2002, Cohen & Levinthal, 1990) and to how attention is generated and directed to a certain source of knowledge (Kim et al., 2016) to be able to adopt knowledge. RAC, in turn, refers to the transformation and exploitation of knowledge, and determines the organization's abilities to leverage the absorbed knowledge (Zahra & George, 2002), act (Kim et al., 2016; Ocasio, 1997) and invent (Lis & Sudolska, 2015).

Research on absorptive capacity has been heavily focusing on PAC, whereas RAC or the critical link between PAC and RAC in open innovation has not got as much attention (Kim et al., 2016). Likewise, previous research of open innovation has focused on external knowledge search, but relatively little is known about the way organizations exploit knowledge and draw the ideas into their innovation processes (Laursen & Salter, 2006). Additionally, even though AC is a widely used concept, there are few studies discussing the specific capabilities that underlie AC (Kazadi et al., 2016). It is, however, important to identify the capabilities that contribute to the innovative performance of an organization.

This thesis aims at taking both components of AC into consideration to understand the whole open inbound innovation process. By examining the challenges in open innovation, crowdsourcing and innovation contests, this thesis aims at specifying the capabilities that underlie AC and affect the innovative performance and outcome of the innovation contests.

2.4 Theoretical framework

Previous literature has identified various challenges in open innovation and crowdsourcing. Common challenges include risks of losing control of the innovation process, increasing need for time and resources to run the process, internal resistance, loss of attention to core competences and building and maintaining the needed relationships with relevant external stakeholders. The focus of this thesis is specifically on the challenges relating to an organization's ability to utilize the externally acquired information.

Besides investments in time and resources, organizations need new capabilities and routines for benefiting from the externally sourced knowledge (Blohm et al., 2013). The way to generate value from crowdsourcing is through knowledge management capabilities, and especially absorptive capacity. To synthesize previous literature, a basis for the framework was created by combining the dimensions of absorptive capacity, the stages of crowdsourcing process in an innovation system, and the key stages of innovation contests mentioned in innovation contest literature. Literature on absorptive capacity divides knowledge management process into five dimensions: identifying an opportunity, knowledge acquisition, knowledge assimilation and transformation, and knowledge exploitation. Crowdsourcing process, in turn, can be divided into six steps: request set-up, request broadcasting, request acceptance, information pooling and integration, and learning from the crowd. Lastly, based on both crowdsourcing and innovation contest literature, attracting stakeholders and selecting ideas are critical in the knowledge management process of innovation contests. The theoretical framework will be built on the frame presented in Figure 3.
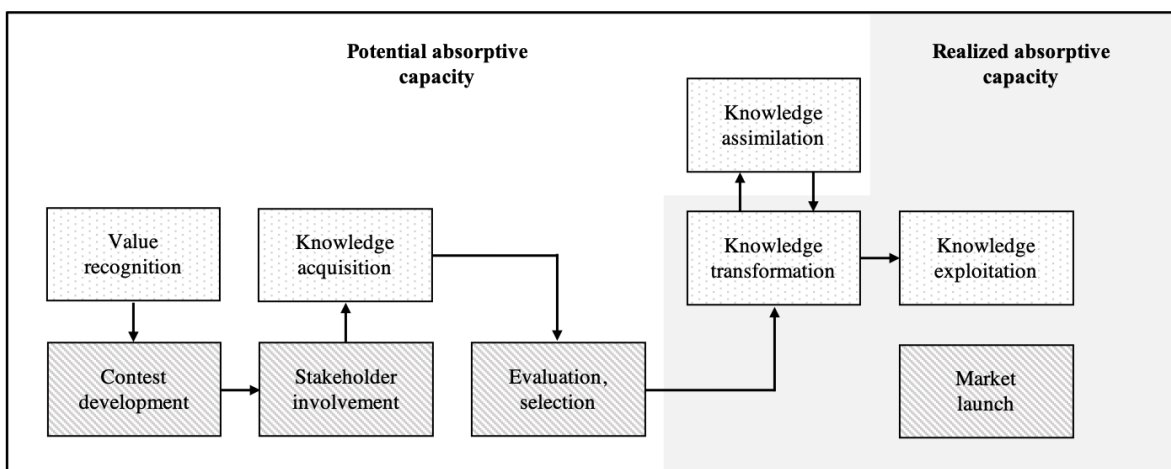

Figure 3. Absorptive capacity in innovation contests

The dimensions of absorptive capacity include value recognition, knowledge acquisition, knowledge assimilation and knowledge transformation as well as knowledge exploitation. The figure also shows the distinction between potential and realized absorptive capacity as discussed earlier.

The stages of an innovation contest are contest development, stakeholder involvement, evaluation and selection and possibly market launch depending on the contest objectives. These stages are adapted from the crowdsourcing process illustration and innovation contest literature. Contest development refers to request set-up and stakeholder involvement refers to request acceptance in the illustration by Risom Jespersen (2018). The evaluation and selection stage was added based on innovation contest literature, and market launch was adapted from the crowdsourcing illustration. Information pooling as illustrated by Risom Jespersen (2018) can be considered as the same stage with knowledge acquisition, and information integration relates to knowledge assimilation and transformation. To conclude, it is important to point out that these theoretical stages are not clearly separated in practice but may overlap during the innovation process.

The following subsections will discuss the challenges related to knowledge management in each stage preceding knowledge exploitation as identified in existing literature on open innovation, crowdsourcing and innovation contests. However, since contest development was discussed previously in subchapter 2.2 and because the knowledge management challenges of this stage are strongly embedded in the stages of stakeholder involvement and knowledge acquisition, the stage will not be separately re-discussed.

2.4.1 Identifying an opportunity

In the first stage of identifying an opportunity, existing literature recognizes two organizational challenges: recognizing the value of external knowledge and gaining managerial support.

First of all, in order for an organization to open their innovation processes and engage in innovation contest activities, the potential value of external information must be acknowledged. In terms of the theory of dynamic capabilities consisting of sensing, seizing and transforming, innovation contests seem to support the sensing capabilities relatively efficiently (Remneland Wikhamn, 2013; Terwiesch & Ulrich, 2009). However, the ability

to recognize the value of external knowledge, and thus the use of external sources and search behavior depend on three factors: external environment, past experiences and successes in innovation, and future expectations (Laursen & Salter, 2006). Negative past experiences can direct attention inwards by creating a myopia towards utilizing external knowledge sources (Levinthal & March, 1993).

Secondly, the organization needs managerial support in order to engage in the innovation contest activities. When beginning to open the innovation activities, there is a risk of losing control over the innovation process that has previously been closed (Hjalmarsson et al., 2014; Chesbrough et al., 2006) and a fear of competitors gaining access to valuable ideas and losing competitive advantage (Chesbrough et al., 2006). Additionally, learning and finding opportunities is often preceded by uncertainty and a period of trial and error, which makes the identification of the most optimal channel for utilizing external knowledge sources challenging for managers and other decision-makers (Laursen & Salter, 2006; Terwiesch & Ulrich, 2009).

When the management is on board, and the value of external knowledge has been identified, the organization needs to set the objectives for the innovation contest. Mortara et al., (2013) argue that organizations often set too ambitious and undefined organizational objectives for an innovation contest. Additionally, agreeing on objectives is key in aligning organizational and participant motivation. Organizations work as a part of larger value networks consisting of external stakeholders to support open innovation (Chesbrough et al., 2006). In these networks, value is co-produced, and the outcome depends on how well the objectives of all parties are aligned to each other (Moore, 1991). Kim et al. (2016) also argue, that the innovation objectives are crucial in creating contest targets and determining the kind of outputs that are expected to be produced by the innovation contest.

Even though this research acknowledges the challenges relating to the initial phase of identifying an opportunity and the role of managerial support during that phase that enables the entire innovation contest process to begin, the challenges are considered to be outside of the scope of the research. The organizational capabilities needed for the innovation contest to be successful are the main topic of the research, and for that reason it is expected from the organizations to have already identified some level of an opportunity to engage in the contest in the first place. However, the level of commitment in the initial opportunity identification phase will likely impact the latter challenges, and through them this phase will be taken into consideration in this research.

2.4.2   Stakeholder involvement

Organizations may find it challenging to build capabilities for stakeholder networking and competence mapping: the ability to identify stakeholders with relevant competences and knowledge and maintain collaboration with them (Nambisan, 2002; Piller & Walcher, 2006; Kazadi et al., 2016), even though reaching external knowledge sources is becoming ever simpler. Listening to all of the current customers or users could lead to diminishing innovativity as they might have a tendency for sticking to old procedures (Piller & Walcher, 2006). Not all ideas provided by users or other external stakeholders are contributing to successful innovations, which explains why open innovation should not be seen as a substitute for internal practices but rather as a supplementary method (Piller & Walcher, 2006). Existing studies also emphasize that it may be difficult for the organization to motivate these relevant stakeholders to participate in the innovation activities (Kazadi et al., 2016), indicating that it is crucial to understand both the organizational and participant motivators.

In order to successfully utilize the externally sourced knowledge, organizations also need to be able to build and maintain an ability to collaborate with these external actors by creating a shared understanding and ways of working together (Laursen & Salter, 2006). Sustaining these deep connections with external actors requires large amounts of resources as well as attention (Laursen & Salter, 2006). Understanding the depth of the relationships between the organization and external actors helps to assess the way these sources are integrated into the organization's internal innovation system (Laursen & Salter, 2006).

2.4.3   Knowledge acquisition

To acquire knowledge, organizations face challenges related to building and maintaining the required capabilities. Organizations may lack internal expertise to be able to plan the necessary steps in the innovation process (Kelly & Storey, 2000; Cooper, 2008; Cooper, 1990) and may try to shortcut their way to success, which often leads to weak outcomes (Cooper, 1990). Yet, as argued by Remneland Wikhamn (2013), solely engaging in open innovation activities will not create the needed knowledge management capabilities to benefit from the external contributions. Regarding knowledge acquisition, previous literature has identified challenges relating to building the processes and technical capabilities (Blohm et al., 2013; Ahonen & Lietsala, 2007) and finding and building

relationships with relevant external actors (Piller & Walcher, 2006; Laursen & Salter, 2006; Kazadi et al., 2016). These capabilities affect the decision about how to build the needed infrastructure (Ahonen & Lietsala, 2007) and how to design the contest to support the objectives.

Firstly, the organization needs a strategy on whether they will build the needed infrastructure and processes for innovation themselves or outsource it to an innovation intermediary (Ahonen & Lietsala, 2007; Nambisan, 2002). The emergence of Internet and social media have widened the reach to external sources of knowledge (Piller & Walcher, 2006; Hofstetter et al., 2018). Even though these advancements offer an inexpensive infrastructure for collaborating and communicating with large communities (Ahonen & Lietsala, 2007), they also create several challenges. Additionally, as mentioned before, identifying the most optimal channel for the organization's purposes is a challenge for managers and other decision-makers, since learning and finding opportunities is preceded by uncertainty (Laursen & Salter, 2006; Terwiesch & Ulrich, 2009). Furthermore, learning to absorb knowledge from new external sources includes understanding how the knowledge channel works and what kinds of norms, habits and routines people share in it (Laursen & Salter, 2006).

Secondly, the organization needs to design the contest by taking the objectives into consideration to gather relevant contributions. A challenge recognized by previous studies is determining the scope of the innovation contest and choosing the appropriate design elements to support that (Bullinger & Moeslein, 2010). To be radically innovative in the early stages of the product life cycle where the key knowledge may be held by only a few actors, organizations need to source deep knowledge and experiences from a smaller number of relevant sources, including lead users and suppliers, for instance (Laursen & Salter, 2006). However, knowledge acquisition changes over time when the market matures, and innovators gain the specific knowledge. In the later stages of the product life cycle, organizations need to acquire external knowledge from a larger number of sources in order to find new combinations of existing technologies, leading to incremental innovations (Laursen & Salter, 2006).

Another key challenge in knowledge acquisition identified by previous studies is the risk of over-search that can lead to decreasing innovative performance due to increasing costs (Laursen & Salter, 2006). The innovative performance of an organization depends on the performance of knowledge search, in which the search depth and scope have an

inverted U-shaped relationship (Katila & Ahuja, 2002). Over-search describes the point in which the increasing depth and scope lead to diminishing innovative performance. One explanation for over-search are the lowered costs of interacting with external stakeholders and the widened reach. Due to the previously discussed advancements in information technology, online crowdsourcing platforms are attracting an increasing number of contributors (Blohm et al., 2013). This inevitably leads to enormous amounts of data and information of high variety for the crowdsourcer to analyze and derive business value from (Blohm et al., 2013). As identified by Blohm et al. (2013), the challenges of absorbing crowdsourced data evolve around the volume and variety of data. According to their article, the huge number of contributors and the speed of contributions cause the increasing volumes, and low restrictions on contribution formats and specificity result in highly various contributions. These attributes cause challenges in three activities in the crowdsourcing process: data evaluation, data dissemination and data assimilation (Blohm et al., 2013). Furthermore, too much openness can in the long-term lead to a loss of control over core competences since attention is allocated narrowly (Nambisan, 2002).

2.4.4   Evaluation and selection

Previous literature has recognized four key challenges relating to selecting the ideas in crowdsourcing or innovation contests: allocating managerial attention to key issues (Kim et al., 2016; Ocasio, 1997), over-search (Laursen & Salter, 2006), involving key decision-makers in the selection process (Mortara et al., 2013) and forming the evaluation criteria (Remneland Wikhamn, 2013; Chesbrough et al., 2006).

According to Kim et al. (2016) and Ocasio (1997), key challenges in open innovation are formed by attentional constraints. Previous literature on attention-based theory has discussed the acquisition and assimilation of external knowledge: how attention is distributed between different knowledge sources (Kim et al., 2016). However, it has not taken the components of transformation and exploitation of this knowledge into consideration or answered the question of how the distributed attention enables the creation of an output (Kim et al., 2016). Even if open innovation and innovation contests ease the recognition and acquisition of knowledge, knowledge still needs to move further and cross internal borders in an organization in order to be integrated to the existing knowledge base (Kim et al., 2016). Therefore, realized absorptive capacity is considered crucial for completing the open innovation process (Kim et al., 2016).

Over-search has been recognized as one of the challenges hindering optimal allocation of attention. As stated by Laursen & Salter (2006), squandered search efforts in too many channels can lead to an unmanageable amount of ideas, which simultaneously hinders the organization's ability to screen, evaluate and execute the ideas due to the lack of attention required for implementation.

Attention allocation can also be associated with another challenge in the evaluation and selection process. Mortara et al. (2013) mention that one of the challenges in innovation contests is getting the key decision-makers to participate in the process of the innovation contest and especially in the judging phase, including idea evaluation and selection. They also point out that there is often not enough time in the innovation contest process to convince the decision-makers about the ideas. According to the theory of Ocasio (1997, pp. 203), decision-makers are required to "concentrate their energy, effort and mindfulness on a limited number of issues" to be able to achieve improved strategic performance (Laursen & Salter, 2006). It can therefore be argued that attention-allocation capability impacts the level of decision-maker involvement in the assessment and selection process. In order to effectively utilize externally sourced knowledge in the internal innovation process, the organization needs to have a strategy to allocate managerial attention on the key activities (Laursen & Salter, 2006). This is an explaining factor to why some organizations have the capability to adapt to changes in the external environment and transform external knowledge to internal use to generate new products and processes (Laursen & Salter, 2006).

Lastly, the organization needs clear evaluation criteria that is based on the objectives of the innovation contest. The first idea evaluation challenge relates to the level of radicality of the ideas. The more disruptive the idea, the more difficult it is for the evaluators to recognize it beforehand, and to convince employees to be on board since it often challenges established practices, investments, employees' roles or power positions (Remneland Wikhamn, 2013). Secondly, organizations need to acknowledge possible biases in idea evaluation and selection as argued by Chesbrough et al. (2006). They discuss the importance of minimizing the risk of false negatives, which refers to the risk of rejecting ideas that would have been market successes. Focusing only on minimizing false positives, situations where an innovation is taken to market and fails, leads to an increasing number of false negatives (Chesbrough et al., 2006).

2.4.5 Knowledge assimilation and transformation

Literature has identified four challenges in the knowledge assimilation and transformation phase: communication, not-invented-here syndrome, radicalness of inputs and substitution effect between internal and external sources of knowledge.

Firstly, communication within the innovation network and the organization itself has a significant role in innovative performance. A key obstacle in stakeholder knowledge management capability is creating routines for information sharing within the innovation network and within the organization (Kazadi et al., 2016). Therefore, it could be argued that not only the communication between organizational and external sources of knowledge but also communication within the organization plays an important part in absorptive capacity (Cohen & Levinthal, 1990), thus in innovation capabilities.

Secondly, many of the challenges in stakeholder knowledge management, thus in assimilating, transforming and integrating new knowledge into the organization's knowledge base, are related to the not-invented-here (NIH) syndrome. Katz & Allen (1982) have acknowledged that there may exist unwillingness among the internal members of the organization to value ideas coming from external stakeholders. Directing attention to external knowledge sources can result in increasing internal resistance due to the NIH syndrome that causes people to believe they possess the monopoly of knowledge in their field, resulting in new ideas being rejected when they have been created by an outsider (Katz & Allen, 1982). The NIH syndrome not only affects knowledge assimilation, but also knowledge transformation (Cohen & Levinthal, 1990).

Thirdly, it has been recognized that the more disruptive the idea, the more difficult it is to convince employees to be on board since it often challenges established practices, investments, employees' roles or power positions (Remneland Wikhamn, 2013). Additionally, when the external information significantly differs from the internal knowledge, some employees likely end up in a "gatekeeper's" role, translating the information for the rest of the organization to understand (Cohen & Levinthal, 1990), which could be argued to impact the way the information is interpreted and transformed. The challenge has been explained in literature about AC. It is argued that prior knowledge is a strong determinant of AC and that if external knowledge is similar to the internal knowledge of employees, it is more easily assimilated (Cohen & Levinthal, 1990). However, no matter the radicality of the information, once organizational attention is

directed towards new, external sources of knowledge, new resources are required to exploit it (Kim et al., 2016).

Fourthly, in open innovation, the external and internal sources play an equal role (Chesbrough et al., 2006) and support each other. Internal research and development activities generate new knowledge while increasing the organization's ability to assimilate existing knowledge generated by external actors (Lampel et al., 2012). This supports the organization's ability to imitate new innovations or use external knowledge as a starting point for further research (Laursen & Salter, 2006). The NIH syndrome, however, causes a substitution effect between the use of external knowledge sources and internal research and development (Laursen & Salter, 2006). This could also explain the lack of internal commitment to external ideas as identified by Mortara et al. (2013), as well as the commitment to idea execution.

2.4.6 Framework

Based on the above-mentioned challenges identified in existing literature about open innovation, crowdsourcing and absorptive capacity, the most common challenges in knowledge management seem to relate especially to three stages in the crowdsourcing process: attracting relevant stakeholders, acquiring knowledge that supports objectives, and overcoming internal resistance. In this thesis, these critical stages are considered as key gaps in the process of utilizing ideas in an innovation contest and transferring them within the innovation system. The gaps are illustrated in Figure 4.
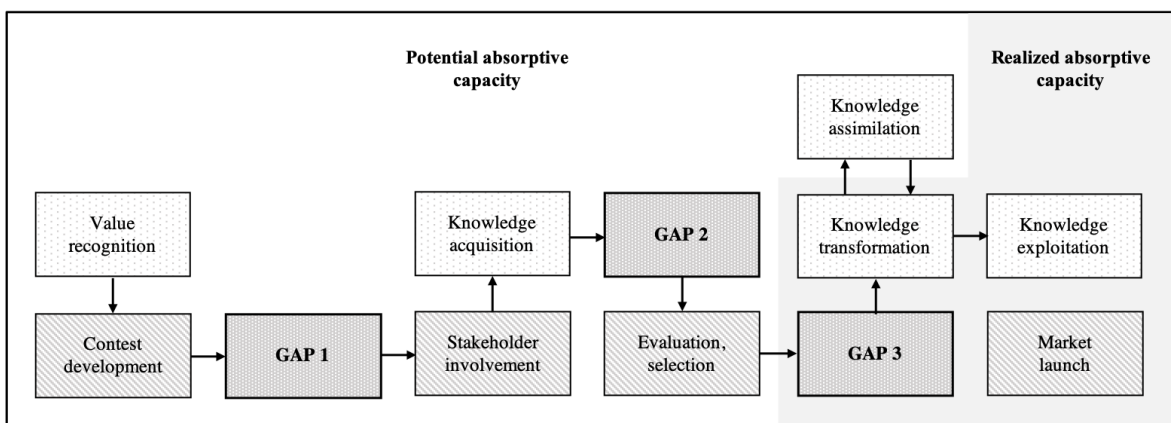

Figure 4. The theoretical framework.

The first gap is between contest development, or request set-up as discussed earlier, and stakeholder involvement, in which the organization needs to be able to attract the

relevant external stakeholders and maintain relations with them. Overcoming the gap requires understanding the underlying motivations and objectives of participants and the organization itself and supporting them through contest design, stakeholder networking and relational capabilities.

The second gap is between knowledge acquisition and evaluation and selection, in which the key determinants for success include overcoming the challenge of over-search, attention-allocation, decision-maker involvement and the challenges of ensuring high quality of ideas and creating the processes for idea evaluation.

The third gap is between evaluation and selection, and knowledge assimilation and transformation, in which the key determinants for success include the ability to overcome the not-invented-here syndrome and substitution effect between internal and external sources of knowledge as well as creating internal processes for knowledge sharing. Achieving an innovative culture and getting employees and decision-makers on board with the objectives of the innovation contest enable overcoming resistance and the NIH syndrome.

The main focus of the following research will be on the third gap that is also in between the organization's potential absorptive capacity and realized absorptive capacity. As discussed by Risom Jespersen (2018), learning from the crowd requires an organization to synthesize and integrate the knowledge into its innovation system, and is done by the organization alone. It therefore best answers the initial research question: *Which knowledge management capabilities an organization needs to exploit the ideas from an innovation contest?*

However, since overcoming the previous two gaps are expected to impact the organization's capability to exploit the acquired inputs, they will also be taken into consideration with the related research questions: "*What are the key challenges in knowledge management in the innovation contest process?*" and "*What is the role of absorptive capacity in these challenges?*"

3 Methodology

This chapter explains the research methodology. The chapter is divided into five subchapters. In the first subchapter, research philosophy, the ontological and epistemological views of the research are discussed. In the second subchapter, the research design and approach are defined. In the third subchapter, the method for data collection is explained, followed by the fourth subchapter that concentrates on the data analysis method. In the fifth chapter, the trustworthiness and limitations of the methods are discussed.

3.1 Research philosophy

The aim of this research is to gather knowledge about the internal events in the innovation contest process and especially explore the knowledge management activities and capabilities within that process. Even though the knowledge sought about the events in the process and the knowledge management activities could be considered relatively fact-based, it is likely that subjective matters have a substantial impact on the issue as well. The perceived success of the innovation contest is subjective and the knowledge management capabilities in organizations are dependent on human intentions and therefore knowledge in this research resides with social actors.

In this research, the primary ontological point of view that answers the question of 'What is there in the world?' is considered to be critical realism. In critical realism it is understood that there is an observable world and a single realism that is not dependent on the human consciousness but also that knowledge is socially constructed and therefore the same reality may have multiple interpretations (Eriksson and Kovalainen 2008, Buchanan & Bryman, 2009). Fletcher (2017) discusses the three levels of critical realism. On the level of empirical, there are the events as they are experienced and interpreted by humans. On the level of actual, the events are not mediated by human experience and occur whether they are interpreted by humans or not. On the level of real, there are the causal mechanisms that affect the events appearing on the empirical level. The main goal of critical realism is understanding these causal mechanisms by explaining the social events (Fletcher, 2017). The relatively factual nature of knowledge sought in this research would first suggest that the ontological view is positivism where the only legitimate knowledge is considered to reside in experiences and can be obtained by scientific methods (Eriksson

and Kovalainen, 2008). However, in this research it is also acknowledged that subjective matters such as culture, experiences, perceptions and attitudes have an impact on how the events are interpreted in innovation and knowledge management activities where humans are the main actors, which supports the ontological view of critical realism.

Epistemology of research defines the availability and limits of knowledge by answering the question of what knowledge as well as the knowledge sources and limits are (Eriksson and Kovalainen, 2008). The epistemological view to associated with critical realism is substantialism according to which reality is taken as material that people, however, may interpret in various ways depending on time and context (Eriksson and Kovalainen, 2008). Thus, it is acknowledged that the real activities can be perceived and interpreted differently depending on the individual, timing and context.

The model of abduction was the primary way of bringing knowledge forward in this research. In abduction, theoretical concepts are used to re-describe the empirical data (Fletcher, 2017). Abduction can be used to describe the combination of deduction and induction, in which both deduction and induction are used at different phases during the research (Eriksson and Kovalainen, 2008). In deduction, theory is considered the first source of knowledge based on which hypotheses are made and tested empirically, whereas in induction theories are seen as the outcome of empirical research (Eriksson and Kovalainen, 2008). Also, Fletcher (2017) recognizes that critical realists use a theory and researcher-driven approach that looks for tendencies instead of laws in the data, which is supported by the model of abduction.

In this research, the theoretical gaps were identified in literature and formed the initial assumptions as well as the more specific research focus for the empirical part. However, no hypotheses were made or tested, but the aim was to create a theory based on the outcomes. The meanings people give to practical issues in innovation contests are in this research used to construct an understanding of the researched phenomenon of knowledge management capabilities and challenges during the innovation contests.

3.2 Research design and approach

The aim of this study is to understand possible explanations to why many of the contributions of an innovation contest are not exploited and thus find out the capabilities organizations need to fully benefit from the contest. The main research question is:

Which knowledge management capabilities an organization needs to exploit the ideas from an innovation contest?

The research question includes two sub-questions that first aim at examining the main challenges in the knowledge management process during the innovation contest and then building an understanding on how absorptive capacity relates and affects overcoming these challenges.

(1) *What are the key challenges in knowledge management in the innovation contest process?*

(2) *What is the role of absorptive capacity in these challenges?*

Understanding the challenges and reflecting them to the theory of absorptive capacity helps in identifying the missing knowledge management capabilities, and thus in answering the main research question.

Since the topic of this research is relatively unresearched, the qualitative approach was considered to offer the most valuable insights to understand it. Eriksson and Kovalainen (2008) have well described that qualitative research helps to understand how processes work in real-life business contexts and why, which supports the objective of this research.

They have also stated that qualitative research aims at understanding and interpreting information and is sensitive to the social context to form a comprehensive view of the researched issues, whereas the interest in quantitative research is on standardized and structured ways of collecting and analyzing data. Since the relatively abstract internal processes, capabilities, culture and attitudes are at focus in this research and because there are modest prior insights about the topic, qualitative methods are more suitable as a means to gain deep enough insights to the issues by allowing a more flexible and unstructured approach as stated by Eriksson and Kovalainen (2008).

3.3 Data collection

To understand the processes, events and how they have been perceived by people during the innovation contest, the chosen data collection method is interviews. It could be argued that existing data produced by the organization and communicated outside would not provide insights to the internal processes and especially challenges faced during the process, but that the information could be produced for the purpose of this research by interviewing the key decision-makers in the process. Observations, in turn, would require extensive time as information is needed about the whole innovation contest process from start to finish, and therefore was not chosen for method.

The qualitative interview method chosen for this study is semi-structured interview that both supports getting insights to relevant issues identified in the research framework, but also allows further discussion on topics that arise during the interviews. As described by Eriksson and Kovalainen (2008), semi-structured interviews provide themes for discussion but at the same time enable a variety of question types, including 'what' and 'how' questions. A semi-structured interview approach also enables focusing on the main themes, in this thesis the three gaps identified in previous literature, but simultaneously enables new topics to arise within the themes. A structured approach, in this research, would restrict the topics discussed and would not guarantee that the relevant issues arise during the interviews, since structured interviews limit the interviewer's flexibility to respond to emerging topics as argued by Eriksson and Kovalainen (2008).

The objective of the research was to gain insights from a variety of perspectives. To enable a variety of issues to arise, the aim was to contact organizations from both the public and private sectors, all of which have organized innovation contests. This would also ensure different objectives and starting points were taken into consideration. Existing data in the form of media texts such as news articles as well as digital blogs were used to gather a list of organizations that have organized innovation contests. In total, six representatives agreed to be interviewed for this research. This included one innovation contest expert from a think tank who has organized or supported multiple organizations in organizing innovation contests and therefore has a comprehensive perspective on the topic.

The organizations varied by size and organization type to provide an extensive view of the similarities and differences in innovation contest processes and challenges. The

interviewed organizations, their types as well as sizes are listed in Table 2. The innovation contest expert is presented separately in the table.

Table 2: Interviewed organizations

ORGANIZATION	ORGANIZATION TYPE	ORGANIZATION SIZE
1	CITY	> 10 000
2	CORPORATION	1000 - 5000
3	ASSOCIATION	100 - 500
4	INTER-MUNICIPAL AUTHORITY	100 - 500
5	INTEREST ORGANIZATION	< 100

INTERVIEWEE 6	INNOVATION CONTEST EXPERT	

The roles of interviewees also varied and included: head of innovation, specialist, researcher, project manager, startup and corporate collaboration manager as well as service designer. Each of the interviewees had been leading the development process of the innovation contest or supported it in a project manager's role. In most cases, the initial idea of organizing an innovation contest had also been brought up by the interviewee. This provided a comprehensive view on each innovation contest from the beginning of the process until the end. However, there were two interviewees that had either entered the innovation contest project after the initial idea of organizing the contest had been brought to the organization's attention or left the organization before the contributions had entered the stage of further development or execution. Yet, in both cases the interviewees had second-hand knowledge from other members of the project team, which was taken into consideration in the interviews.

The innovation contests were organized between years 2018 and 2019. This supported the objective of getting information with more detail since the contests were still fresh in mind for the interviewees. However, the disadvantage of acquiring knowledge about recent contests is that the post-contest processes were mostly still ongoing. Thus, some of the organizations were not able to come to an overall conclusion of the final outcomes of the innovation contest.

3.3.1   Conducting the interviews

The interviews were conducted face-to-face, and all lasted approximately for one hour. The duration of one hour allowed for a deep enough discussion around the predetermined themes but also enabled further exploration of possibly emerging new issues. Additionally, since the interviews were completely voluntary, a one-hour meeting was still relatively convenient for the representatives often on the management level to arrange.

The interviews were recorded using both laptop and phone audio recorder applications to enable transcription and analysis afterwards. Recording the interview enabled no details to be missed and also freed up the interviewer's time to be present during the interview and take notes only about the key issues that needed further elaboration during the interview. The interviews were transcribed directly afterwards to ensure no relevant details were forgotten. Also notes about possible reliability issues or other challenges during the interviews were written directly after each interview.

The language chosen for all interviews was Finnish since it was the first language for all the interviewees and would therefore most likely provide the most comprehensive answers by preventing language barriers. The quotes used in the findings chapter in this thesis are translated to English by the author.

3.3.2   Interview guide and questions

The two interview guides were created separately for organization representatives and the outside specialist working in the field in a consultative role and were strongly based on the theoretical framework. They included three main themes: the innovation background in the organization, the innovation contest process that had a focus on the knowledge management activities and processes, and the overall experience. The translated interview guides are presented in Appendix A.

The aim of the first theme was to investigate how the organization views open innovation and what the attitudes are towards externally sourced knowledge. Additionally, the goal was to find out the real motivators and objectives behind the innovation contest, and the innovation contest development process, which would indicate how prepared the organization was for the contest to succeed.

The aim of the second theme was to find out the original process that was planned for acquiring, evaluating, selecting and integrating the contributions, and the actual activities that took place in each of the stages. This theme was strongly linked to the three gaps in the theoretical framework and therefore were anticipated to provide the key insights for the research questions.

The last theme offered the interviewees a possibility to reflect their experiences of the contest as a whole, comment on possible challenges and learning experiences that were not discussed during the previous questions and give their opinion about the circumstances under which organizing an innovation contest would be beneficial.

The initial interview questions were made as simple as possible, meaning that academic words and jargon was avoided and substituted with words used in everyday life. Additionally, the initial questions were broad to encourage more speech and to give the interviewees more control over their answers, as described by Eriksson and Kovalainen (2008). The majority of the initial primary questions included "how" questions to dig deeper into the activities and processes before, during and after the innovation contest, but simultaneously avoid leading questions that, according to Eriksson and Kovalainen (2008), would create an expectation of an answer the interviewer wants to get. Leading questions could therefore have a risk of producing little to no new insights to the topic. The reason for using a more indirect approach in the beginning was to enable issues important for the specific organization and interviewee to arise before directing them towards the more specific research objectives.

These broad and indirect 'how' questions were then followed up with more direct secondary questions about possible challenges during each process, their possible causes and ways to overcome the challenges, depending on the initial answer, to give a better indication of the relevant organizational capabilities during each activity. Dividing the questions into primary and secondary is also encouraged by Eriksson and Kovalainen (2008) since it enables elaboration around topics and also allows a smoother transition between each question by giving the interviewee a possibility to first reflect the activities that were done during a process in the innovation contest rather than heading straight to direct, specific questions. After the overall process and activities have been brought to mind, it is likely easier for the interviewee to remember and discuss the more specific details, such as challenges and success factors during each process, which leads to richer responses overall.

3.4 Data analysis

This subchapter discusses the methods used for analyzing the gathered interview data. The first subsection discusses how the data was prepared. The second subsection encloses how the interview data was coded. The last subsection then discusses the data analysis. The method chosen to analyze the gathered interview data is thematic analysis.

3.4.1 Preparing the data

The recorded data was prepared for coding and analysis by transcribing it. The transcriptions were written to include all the said words in the language of the interviews, except for repetitive filler words such as "and and". Additionally, pauses in the conversations were left out since they were not considered relevant as the objectives of this research are focused on the actual content of speech. This approach is also supported by Eriksson & Kovalainen (2008) that describe the said words to often times be enough in business research, whereas for a more subjective approach such as a narrative analysis they would not be sufficient.

After the initial transcriptions were completed, they were re-read to get a better overall image of what had been said. During this, also the possible misspellings were corrected, and initial marks for valuable quotes were made in the text.

3.4.2 Coding the data

The initial codes for the analysis were created based on the themes in existing literature and the theoretical framework. This approach is also supported by critical realism that aims at explaining the reality by engaging with theories that already exist about the reality (Fletcher, 2017). As argued by Eskola and Suoranta (1998), the first round of structuring the data should be done in a way that is understood in a similar way by the interviewee, interviewer and the researcher. However, as noted by Eskola and Suoranta (1998), the usage of assumed codes is subjective, and therefore the initial assumption of the used codes should not restrict the analysis. Instead, the codes should transform during the analysis process according to the issues arising in the collected data. Fletcher (2017) points out that in critical realism research, the codes drawn from the existing theory create a way

to redevelop that theory. For that reason, the initial list of codes changed during the analysis process to better represent the key themes in the data.

First, the data was analyzed according to the initial theme codes. During the process, the theme codes and subcodes were added, transformed and removed, after which there were 173 codes in total.

Then, the coded data was re-analyzed to clarify the meanings and identify key themes and issues. As stated by Eskola and Suoranta (1998), the coding process can be improved by increasing the times the data has been analyzed, but never manages to capture all the perspectives and meanings. They also support the two-fold coding where the initial code structure evolves and is then applied to all of the data during the second time.

3.4.3 Analysis

In the analysis phase, thematic analysis was used. Eskola and Suoranta (1998) support thematizing when the aim is to solve practical challenges, which supports the purpose of this research. They also argue that thematizing requires interaction between the theory and the empirical parts. Since the theoretical part of this thesis was strongly used to define the research questions, it presented clear focus areas for the empirical research. Therefore, it makes sense to use thematic analysis where the theoretical framework creates a base for analyzing and identifying the issues relevant for the research question.

After coding the interview data, the data was first divided under themes. The themes and examples of related codes are presented in Appendix B. The themes were initially based on the three gaps in the theoretical framework and thus on the themes also appearing in the interview guides. Individual quotations from all of the organizations were then collected under each theme in an Excel sheet, which helped to identify similarities and differences between the activities and challenges between the organizations and the innovation contests.

Then, the analysis progressed to comparing previous theories to the emerging issues, and to presenting and discussing various explanations for these similarities and differences. While writing about the results, the findings were iteratively structured under seven key themes which also form the subchapters in the Findings chapter in this thesis: role of innovation and open innovation, motivation and objectives for innovation contests, contest

design and development, reaching and attracting participants, acquisition of contributions, review and assessment of contributions and, lastly, exploitation of contributions.

3.5 Trustworthiness and limitations

As argued by Eskola and Suoranta (1998), in qualitative research the data analysis and analysis of research trustworthiness are strongly linked together and cannot be separated. They point out that in qualitative analysis, the main criteria for trustworthiness is the researcher, and therefore the assessment of reliability and validity concerns the whole research process. During each phase of the analysis in this research, trustworthiness was assessed, since the decisions made along the way are subjective and have an impact on the presented results.

Already when first going through qualitative data, the interpretation is always an assumption of what the meaning of the interviewee originally was (Eskola and Suoranta, 1998). They also point out that coding of data in qualitative research is never complete, and therefore never manages to capture all possible interpretations and meanings in the data. Additionally, interpreting the collected data by identifying issues relating to the themes identified in advance in the theoretical framework is always highly subjective. The same data can be interpreted in countless ways that all differ from each other. The analysis and results are affected by each decision made by the researcher.

However, to support and justify the interpretations as comprehensively as possible, quotes from the interviews are included throughout the presentation and analysis of results, as supported by Eskola and Suoranta (1998). The interpretations of data were completed in short steps and this process has been described as logically as possible as supported by Eskola and Suoranta (1998) so that no large, inconsistent jumps from data to interpretations would be presented. To improve the reliability, several rounds of analysis were used for the same data.

It also needs to be pointed out that the motivations of interviewees and the subjective circumstances they were in has an impact on the credibility of responses. The topic of this research concerns internal processes and possible issues in the processes and management, which can be considered quite a sensitive topic. Therefore, respondents may avoid disclosing some of their experiences, internal challenges and conflicts. To avoid this and to

enable interviewees to provide as reliable and honest responses as possible, the interviews were completely anonymous. After each interview, a written description of the research conditions was completed, including possible concerns that would affect reliability. These concerns were taken into account when analyzing the data. Additionally, to improve credibility, the interview questions were formulated to be as universally understandable as possible. This included avoiding jargon and academic language and explaining the possibly unfamiliar terms to the interviewees.

The coverage of the research is not sufficient to make generalizations and the aim of the analysis was not to explain the data at full length. However, this is not considered as a limitation since the aim of this research is not to prove or reject any hypotheses but present ideas and catalyze theoretical discussions around the topic.

The resources for this research were limited. Even though similarities in responses started to appear with six interviewees, there is a possibility that the point of saturation is higher, and a larger number of respondents would bring up new issues. To be able to improve the generalizability and repeatability of the research, the results of this thesis could be tested with a larger sample.

3.5.1 Limitations

The method chosen for this research has several limitations. Firstly, because the number of interviews is relatively small, no generalizations can be made from the results. For this, further quantitative research should be conducted. Additionally, the relatively short interview time restricted the depth of the discussion and therefore increased the risk of relevant issues remaining unnoticed.

Secondly, the sample only consists of organizations operating in Finland, which is likely to have an impact on the results as well. Organizations operating in other countries would likely have differing results.

Thirdly, since only one representative from each organization was interviewed to stay within the scope of this research, the study could not form as comprehensive of an image of the organization as interviewing multiple representatives would provide. Furthermore, each of the interviewees had relatively similar roles of leading the innovation contest process, which likely affects how the activities and challenges are perceived and described.

Fourthly, due to the objective of this study, the focus was strongly on the organizer side of the competitions. However, to fully understand the whole innovation contest process in the innovation system, the participant perspective should also be studied. Based on previous literature, the expectations, motivators and design of the contest impact participant behavior and therefore the ways for organizations to manage the contest and exploit the ideas.

4   Findings

With a variety of different organizations, it was possible to gather a wide understanding of possible ways to handle the innovation contest process. Overall, all the innovation contests had different motivators, objectives as well as outcomes. The variety of design elements are illustrated in Table 3.

Table 3: Innovation contest design elements in the interviewed organizations

DESIGN ELEMENT	ALTERNATIVES					
Organizer	PUBLIC		COMPANY		NON-PROFIT	INTERMEDIARY
Media	ONLINE		OFFLINE		MIXED	
Task specificity	LOW		DEFINED		HIGH	
Degree of elaboration	IDEA	SKETCH	CONCEPT	PROTOTYPE	SOLUTION	EVOLVING
Target group	UNSPECIFIED		OPEN		SPECIFIED	
Contest period	SHORT TERM			LONG TERM		
Evaluation	INTERNAL JURY		EXTERNAL JURY		MIXED JURY	
Participation	INDIVIDUAL		TEAM		MIXED	
Community	ENABLED			NOT ENABLED		
Reward system	MONETARY			MIXED		

As discussed earlier, public organizations, companies and non-profit organizations were all represented in the research sample. Only individual organizers were not included. Additionally, an innovation intermediary was indirectly included as it was the organizing partner of one of the interviewed organizations. Media used for organizing the contest included all of the alternatives; online, offline and mixed channels. Some contests allowed online submissions via email or through the innovation contest website, whereas others also allowed physical prototypes to be sent. There were also offline channels involved in multiple contests, including events, pitching sessions and a week of participant work on-site. Task specificity in the innovation contests leaned towards low and defined. The objective in the majority of contests was acquiring fresh, new ideas and the organizations did not want the participants to narrow their thinking. However, a couple contest challenges required specific skills and knowledge, and therefore the tasks were classified as highly specific. As such, the degree of elaboration also varied greatly, and the five innovation contests together allowed for all types of contributions from raw ideas to

finalized solutions. The target group in most contests was relatively undefined and open to the whole public and did not specifically demand for certain expertise or knowledge even though it was of great advantage. Additionally, there were contests with several different contest categories of which some demanded specific skills, and some invited the whole public. Lastly, there was a contest with a highly specified target group. Even though the innovation contest processes as a whole lasted from six months to a year in the interviewed organizations, typically the contest time for participants ranged between a few weeks to a few months, excluding the post-contest development process. However, no ongoing contests or contests with a duration of hours or days were included in the sample. The design element that in this sample had the narrowest representation of alternatives was the evaluation method, since all of the organizations used a jury. However, the members of the jury varied between internal personnel, external stakeholders and a mix of both. The innovation contests allowed for both individual participants and participation in teams, as well as in some cases both. Additionally, the majority of contests that were primarily organized online did not have specific attributes that would support community functionality. The contributions were sent individually, and the participants did not know about each other. Yet, there were contests with offline events and a contest that primarily used offline channels and a physical setting, in which a certain level of community functionality existed. Lastly, the reward system in each contest included monetary prizes, but also a varying level of non-monetary rewards such as post-contest support. Gathering insights from a wide variety of innovation contests supports the aim of this research by providing a comprehensive view of the many possible ways to manage the innovation contest process and the acquired contributions.

This chapter will go through the findings from the interview data. The chapter is divided into eight subchapters. First, the role of open innovation in the interviewed organizations is analyzed, followed by exploration of motivations and objectives organizations had set for the contests. The third subchapter goes through the processes and challenges in contest design and development. The fourth subchapter focuses on issues relating to reaching and attracting the target participants, followed by the fifth subchapter that focuses on the stage of acquiring optimal contributions. Then, the sixth and seventh subchapters discuss the contribution review and assessment stage, and the exploitation processes, challenges and capabilities. Finally, the eighth subchapter concludes the findings of this research.

4.1 Role of innovation and open innovation

To understand the initial starting point for any open innovation activities, the interviewees were asked about the role innovation in general has in the organization. Then, the focus was shifted to the attitudes towards open innovation activities.

Almost all interviewees mentioned the fact that the industry the organization is operating in is disrupting, which in turn was considered to call for new activities to create innovation in general. Among the drivers behind the growing role of innovation, digitalization, megatrends in general as well as the need for more systematic ways of innovating emerged in the interviews. *"- - the industry is in quite a big transition right now and so far, it is one of the least digitized. - - the industry will be disrupted quite quickly in the upcoming years and for us it means we need to find new solutions, new innovations. - - there is pressure for how long the trade cycle will remain good and for how long we can survive by doing what we have always been doing"* (Organization 2). *" - - the industry is in a big transition and there are different ongoing trends - - and changes in the way people act and what they need, which is one of the drivers [for innovation]"* (Organization 4). *" - - a lot has happened in our industry and is still happening, which creates pressure to innovate"* (Organization 5).

Even though all of the interviewees recognized the importance of innovation, there were also many challenges that the organizations have identified that may hinder their ability to create and exploit innovations. The first main theme causing innovation challenges was the size of the organization. Interviewees especially in the larger organizations had recognized that there is a lack of agility and making changes in the organization is slow. *"In concrete, this is a large organization and slow to change, so acknowledging that, [the question is] how to exploit all of the emerging innovations"* (Organization 1).

Interestingly, another one of the innovation challenges that was mentioned by one interviewee is the perceived role the organization has in the field of innovation. *"Our role in the market does not necessarily include or we don't always need to be the first innovator but maybe rather the exploiter of the innovation when the innovation is in a mature enough stage"* (Organization 4). Creating new innovations may not always be considered part of the organization's mission or role, but the organization can instead view their role to be a slower adopter of innovations created by others. This could be especially true in

organizations that are not primarily driven by commercial objectives and creating private good when implementing an innovation contest. On the other hand, especially open innovation was considered to be a natural part of the role in organizations that operate together with many different actors on a daily basis. *"We cooperate with a large number of different actors, and the role of this organization is also to take care of and actually coordinate the cooperation networks and provide meeting points for the representatives of different industries"* (Organization 5). *"In my opinion, [the attitude towards open innovation is] good, because we [already] collaborate a lot with a variety of different kinds of actors in different fields"* (Organization 4). Due to their existing role in the market, these organizations likely did not face as much of a cultural and processual change when engaging in innovation contest development and management since they already had networking capabilities and processes to be used.

Thirdly, as was expected from the existing literature, many organizations tend to focus on incremental product or process innovations instead of creating something completely new for the organization. *"When you look behind, innovating in [the organization] has focused quite a lot on improving the existing processes"* (Organization 5). The realization of an increased need to create and bring something completely new to the market to remain competitive has changed the way many of the interviewed organizations view the innovation activities.

The organizations have recognized the potential of open innovation and the fact that most new knowledge lies outside the organization. The majority of the interviewees described that information is constantly collected by the organization by observing what is happening in the organization environment, collecting information, following megatrends or maintain collaboration with other actors in the industry. *"Wisdom is not in any way restricted to the experts in our organization and our organization, but we need to do those things in cooperation and on the other hand find the customer interface to understand what kind of activities, content [is needed] and what kind of needs people have today"* (Organization 3). *"- - [organizations] realize or want to show that they have understood that they do not possess all of the wisdom"* (Interviewee 6). *"What happens in the world and in the market, that is what we follow actively and also try to develop"* (Organization 4). However, instead of solely listening to the information, the organizations have started to use it more actively in development.

In the organizations that had strongly acknowledged the growing importance of innovation and open innovation, management initiative and support were in a crucial role. In most organizations, even when there was internal resistance on the organization level, management support was considered the first requirement for starting any open innovation activities, such as the innovation contest that requires organization-level commitment and resources. *"- - I would say that for us it would not have made sense or been possible to organize this [contest] if we did not have that strong support from the management"* (Organization 2).

However, challenges were also identified in the ability to utilize open innovation. Firstly, lack of receptivity was considered to lower the ability to exploit external knowledge. *"We do listen [to external actors] but receptivity is not necessarily always the best"* (Organization 1). This could be caused by several factors of which, for instance, the internal attitudes, bureaucracy, age, size and agility of the organization to change its ways of operating were mentioned in the interviews.

Secondly, even though the overall attitude towards open innovation in all of the organizations was described positive, one explaining factor for not taking advantage of the full potential of open innovation is the lack of internal skills and capabilities. *"It is difficult to say what the attitude [towards open innovation] is since we have done so little development with external actors so far. I would say that the attitude is positive, but we have not known how to do it yet"* (Organization 2). Also, the need for a more systematic approach to open innovation was recognized. *"If you think about how, for example, innovation structures are built so that you can systematically gather and exploit [innovations], we don't really have those. - - We actively follow what is happening in the world and in this market and try to develop [our operations] but I wouldn't say that we had mastery in innovation"* (Organization 4). Some organizations saw that they lacked knowledge management capabilities to create the needed structures that would support the gathering of external knowledge and the further creation of innovation.

Thirdly, as was discussed in the literature review, the interviewees had recognized change resistance among individuals inside the organization that could possibly hinder the ability to exploit open innovation. *"Surely there exists [the way of thinking that] things are well as they are"* (Organization 1). *"[There exists] the sort of mindset that this what we are doing now is what we will be doing, and not seeing the need for new ways of working"*

(Organization 2). The attitudes could vary between the seniority level of personnel and were considered to be affected by the attitudes especially in the top management.

Interestingly, the interviews revealed differences between companies and public and non-profit organizations. Especially in organizations working in the public sector, routine work and bureaucracy appeared in the interviews as a limiting factor for utilizing open innovation. *"There are many things [innovations] that we cannot take into consideration in the routine work. Bureaucracy is too heavy"* (Organization 1). The challenges caused by bureaucracy not only show in internal processes, but also directly in innovation contest development, participant attraction through prizes, management of the contest and contribution evaluation.

4.2 Motivation and objectives for innovation contest

To understand the starting point for each innovation contest, the interviewees were asked about the overall organizational motivation and objectives, as well as their personal objectives for organizing the contest. The interviews revealed the high variety of primary and secondary motivators for organizing an innovation contest as was expected in the literature review. First, the main motivators will be discussed, and then the more specific objectives that emerged in the interviews will be explored further.

4.2.1 Motivation

As discussed earlier, almost all interviewees mentioned that the organization has recognized external pressure for innovation since the industries are disrupting. Innovation contests are seen as a way to open up the innovation processes, clarify the organization's role in the industry and to understand the changes in consumer behavior by providing a way for external audiences to freely express their opinions and for the organization to look forward. *"- - [we were thinking] what is the way to discuss the topic without immediately being excessively realistic. - - a contest is a good way to gather thoughts"* (Organization 1). Additionally, some organizations have connected it directly to their strategy. *"- - [we have] a new strategy that strongly emphasizes collaboration with external actors and active development of services together with commercial and other actors"* (Organization 4).

Secondly, a large motivator for organizations is getting inputs completely outside the industry to receive contributions that could not have been invented internally. This will be discussed further in the next subchapter as it was strongly reflected in the innovation contest objectives.

Thirdly, to enable open innovation in the long-term, organizations have also realized the need for internal culture change. In one interview, the motivation behind the innovation contest was described to be the ability to internally prove the potential and urgent need for innovation, and the fact that it can emerge in cooperation with external actors and in an agile way despite the organization size. This would support open innovation activities and larger process changes in the future. *"Maybe the biggest [motivator for us] is the culture change and that we could show also to our own people that innovations must be created and that external actors are a significant opportunity, that we can find new models for collaboration and try working also with external actors. - - it is not always that a big [corporation] comes and buys [an external actor] but that we can co-create something, that we can get new technologies and opportunities that we have not even recognized internally yet"* (Organization 2).

Interestingly, two interviewees also explicitly mentioned the fact that innovation contests are trendy at the moment and provide a convenient way for the organization to show externally that they are actively trying out new ways of working and innovating. Publicity and improving the brand value were in general a common theme that appeared in the discussions, especially in the concrete objectives that were set for the innovation contest. *"The contest has kind of been trendy, people want to do things in a slightly new way - -. Showing up as sort of cool, we do these new and different things, something trendy"* (Interviewee 6). *"It could be today's way of doing this kind of more open [innovation] and look for ideas, and profile [the organization] itself"* (Interviewee 6).

4.2.2 Objectives

Each of the interviewed organizations had a varied set of objectives for the innovation contest which differed greatly from each other. On the one end there are contests with strong emphasis on actual new, innovative products and services that would be taken to market, and on the other end there are contests that aim for improving brand value, getting

publicity and creating stronger networks. The majority of the contests, however, lie in between these two ends with multiple goals.

Starting from the real innovation objectives, the clearest objective was receiving executable or fresh ideas and understanding the current demand for new products or services to be able to widen the portfolio of offerings by eventually bringing something new to the market. *"The main goal was that we would find something new [with the participants] that we could start bringing to the clients together. - - we were looking for some twist to what we are currently offering and then be able to develop it further"* (Organization 2). *"We wanted to accomplish some kind of practical thing that would remain in people's everyday life, for tens of years"* (Organization 3). *"- - we were hoping for - - people that we thought have either completely fresh ideas that have not come to our minds or then that kind of [knowledge] through experience that has been buried under the stiff structures"* (Organization 1). *"- - especially understanding how, what kind of services are in demand, how they work, how people are using these services and sort of mirror that to our strategy, our strategic objectives. That was probably the main objective for this contest"* (Organization 4).

The second main innovation objective, in turn, was finding a more systematic way to innovate with external actors, whether other organizations, startups, consumers, students or the general public. Connected to this objective was also creating or developing stronger external networks. As was identified in the literature review, innovation contest requires networking capability, but as can now be argued, it also provides a way to develop that capability. *"The kind of contest with very open specs that invites a wide variety of actors - - gives us an opportunity to start collaborating with different kind of actors"* (Organization 4). *"[organizations] want to find new ways to solve problems and this way new solvers can be found"* (Interviewee 6)

On the other end are objectives aiming for improving the brand value and awareness by providing publicity. Even though the majority of the innovation contests had real innovation objectives, PR was considered at least as a key secondary objective in the majority of the contests. *"Strengthening our awareness and visibility in circles that are not that actively involved in our other operations"* (Organization 3). *"It is probably partially that the publicity and profiling [this organization] has been the primary [objective]. - - We wanted to show outside that we are doing something within this theme, and it is not just pretty words"* (Organization 5). *"Simultaneously we kind of wanted to advertise our*

innovation environment and attract [external] actors" (Organization 2). *"Communications was really crucial - - bringing the core activities visible in a new way"* (Interviewee 6).

As suggested by Mortara et al. (2013) and Lampel et al. (2012) the organization can also be motivated to develop its networks by an innovation contest to support future recruitments. *"Surely companies are constantly looking for good people, good employees"* (Organization 5). Innovation contests are a method for organizations to attract and test talented candidates as well as boost its employer brand, which boosts the organizational performance in the long term.

Finally, at the very end of the spectrum are contests that do not specifically look for a new innovation as an end product but rather focused on developing collaboration and publicity. However, in one of the organizations the possibility of an emerging innovation was not ruled out completely. *"- - we did not really look for, for example, a new invention. [But] it would have been great if it had come up"* (Organization 5).

Other objectives that appeared in the interviews was the aim to understand the organization's own role in the market by understanding the current consumption of current offerings. Another objective in the public sector was to push the market forward by testing and bringing new services in the market and sharing these learnings with other actors in the market.

4.3 Contest design and development

To understand the whole process of the innovation contest and possible challenges during the preparation, the interviewees were asked to describe the design and development of the innovation contest. The main challenges and simultaneously enablers of planning and success of the contest included management support and innovative culture, benchmarking, resources and competence, as well as internal roles and commitment, which will be further discussed in the following four subsections.

4.3.1 Management support and innovative culture

The first key theme that enabled the initiation and development of the innovation contests was management initiative or management support which was mentioned in each

five interviews of the contest organizer organizations. As discussed earlier, the interviewees viewed management support as a requirement for starting the process in the first place. The role management had during the innovation contest process varied in each contest. In one end the management was the initiator and ideator of the whole contest, and in the other end they had a more passive role as an internal promoter, supporter or monitor. Communication during this initial process of getting management approval and support was described crucial. *"The decision process went so that we got approval from the management group that this will be organized and then we selected - - what are the challenges that we start to take forward. Then the members of the management group joined as promoters for these challenges"* (Organization 2). *"This [contest] has not been done before so it and the entirety of it is not familiar to everyone. We needed to describe what the goals are [to management], clarifying the objectives at that point was important. - - we had the discussion as we usually have about other things as well, and it [the contest] was improved and fixed and changed in a way that the core idea does not change but there is always a little bit of fixing, and in that sort of a contest I think it is important to have those conversations"* (Organization 3).

Secondly, innovative culture emerged in the interviews as one explaining factor for successful outcomes. The existing culture was quite strongly reflected in the expectations and objectives set for the contest. The organizations that had a clear innovation objective and aimed at creating concrete innovations to be launched in the future took a realistic look at the opportunities the innovation contest can provide in the current organizational environment early on in the development process. *"We have [business] units that we know are not yet in the point that they could start concretely collaborating with startups, for example, and therefore we should not look for a new [collaboration] partner in there. - - we knew that [the selected units] have innovative directors and managers that can realistically work with the startups"* (Organization 2). The innovative culture showed in both management attitudes as well as the commitment levels of other internal employees involved in the process. *"It was well communicated and the people who were in this [contest management] group were really committed to bringing it to an end"* (Organization 2).

4.3.2 Benchmarking

Thirdly, acquiring external knowledge by benchmarking to previous contests was in many cases the inspiration for the contest. Additionally, benchmarking was used as a means to start or support the innovation contest development and design process. Only one of the organizations had organized innovation contests earlier, but for four organizations this was the first time. However, surprisingly only one of these four organizations relied on an innovation intermediary or any external consultation while designing and developing the contest. The methods that appeared in the discussions that supported the development of the innovation contest were researching previous contests of the same type or in the same industry as well as contacting people who had experience of managing the contest to get coaching and practical advice. *"Of course, I also went through how other actors have proceeded, looked for background information. - - we also benchmarked against those who have acted, for instance, as judges in these kinds of contests, what they think about it and if it is a functional model and if we could go further from there"* (Organization 3).

The organization that decided to utilize the external support of an innovation intermediary had strongly recognized the lack of internal capabilities since it was the first time organizing the innovation contest. *"We had this external partner X facilitating this event with us - - they were a great support for us since there is no one in our organization that has organized this [innovation contest] before"* (Organization 2).

4.3.3 Resources and competence

Each of the organizations had come to the conclusion that organizing an innovation contest especially for the first time requires relatively vast resources, particularly since in these cases the contests were planned, developed and managed along other work. Thus, the main challenges in contest development identified by the interviewees was the lack of resources and competence.

Firstly, the amount of resources allocated for the process had an impact on the time schedule of the design and development process, the marketing activities and the planned support for contestants. The time span from planning to the launch of the innovation contest varied approximately between six months and a year. *"When the contest is open and happening, in that point there is actually not necessarily so much to do but everything*

needs to already be [done] - - I personally felt afterwards that we should have started [planning] even earlier" (Organization 5).

Secondly, the lack of competence, skills and experience in innovation contests in general as well as the lack of cross-functional knowledge and coordination that is required in the development stage were considered a challenge. In many cases, the design and development process required knowledge from different parts of the organization, demanding close collaboration between functions. Capabilities that came up in the interviews included product or service development capabilities and needs, marketing, communications and sales competence as well as the capability to organize and coordinate the process, resources and timing overall. *"Connecting the communications, content and communicative activities into the contest is a surprisingly large part and surprisingly time-consuming, especially when different versions come up and you need to make decisions early on"* (Organization 3). These challenges in many cases resulted from the lack of internal knowledge sharing processes. Additionally, as discussed earlier, acquiring knowledge about the effect and restrictions of legislation and bureaucracy and taking it into consideration in the innovation contest development and management was considered relatively challenging especially in the public organizations.

4.3.4   Internal roles and commitment

The ambiguity of internal roles was another challenge identified in the development stage by multiple interviewees, especially in the innovation contests that included multiple stakeholders on the organizer side. It was explicitly stated by three interviewees that the more there are stakeholders, the more resource-intensive the development process is. Unclear internal roles and decision-making power were also identified as possible reasons for the lengthening of the development process. *"In many cases [the reason the process drags on] is because in the organization it is maybe not clear who can decide and what, and then suddenly 'hey we want this, and he wants that'"* (Interviewee 6).

Lack of internal commitment in different stages of the planning as well as management of the process also emerged in the discussions. Especially in large organizations or in contests involving multiple stakeholders, encouraging strong commitment can be a challenge. *"It requires commitment [from the innovation contest organizers] and even though we try to communicate at which stages commitment is*

required, it will hinder the results if there is no possibility to invest in the stages that need investing" (Interviewee 6). *"[The challenge] lies in commitment. In many cases people think that it would be nice to do this and that, but then it actually takes a lot of time and the large contribution of quite many people alongside all other work"* (Organization 2).

4.4 Reaching and attracting participants

As previous literature indicates, reaching and attracting relevant participants is a requirement for successful innovation contest outcomes. To understand the processes and challenges, the interviewees were asked about methods used to understand and attract participants, and possible obstacles along the process.

Reaching and attracting participants was collectively considered crucial yet challenging among the interviewed organizations. To gain new knowledge, most of the organizations aimed at attracting participants outside their own industry. However, without existing networks, understanding these audiences and being able to attract them was considered challenging. Especially understanding the motivation of different target groups and targeting the innovation contest challenge to the most optimal target group were seen vital yet troublesome.

Another challenge related to the competence of participants. *"- - part of them [participants] are amateurs that are maybe retired engineers or otherwise enthusiastic about inventing new things that I don't think would have been improved or could have become end products by us doing better communications and guidelines. In my experience there is always a number of these fearless inventors participating in these kinds of contests who do different inventions all their lives. If you want to attract knowledgeable participants, then it might require more targeted contest marketing and communications - -"* (Organization 5). It was recognized that many innovation contests aiming at reaching a wide group of people attract a certain group of innovation enthusiasts that are intrinsically motivated by the joy of creating something new even though they might lack the relevant competence and knowledge in the field of the innovation challenge in order to make viable end products. Overall, understanding the motivations of the most experienced and skilled people in order to attract them through marketing activities emerged as a challenge.

The organizations identified several factors that have an impact on reaching and attracting the target group: marketing and communication capabilities, challenge set-up and the organization's brand value, which will be further discussed in the following three subsections.

4.4.1   Marketing and communications

There was a large number of marketing methods the organizations used to reach the target audience for the innovation contest, including both online and offline channels. The online channels included various social media channels, such as Facebook and Twitter, targeted social media campaigns and advertising, email newsletters as well as a website for the innovation contest. Offline methods included launch events, promotion in related external industry events or in events relevant for the target audience group, press releases and earned media visibility as well as utilizing existing networks and partnerships.

For multiple interviewees, the resources required for marketing and communications activities was a surprise. Almost all of the innovation contests had a relatively broad target audience, including both industry experts and industry outsiders, since the objective was to get new, fresh ideas that had not already come up inside the organization itself. *"It quite quickly became evident that this [participant group] is tremendously versatile and then we took a 'quick and dirty' approach that we could in that schedule - -"* (Organization 5).

One of the challenges in marketing and communications and thus in reaching the target group was that the organizations did not have existing connections to the target group, or at least a part of the target group. Reaching industry-insiders was considered relatively easy, but engaging people outside the generic scope was considered challenging.

The network challenge was solved by one of the organizations with the help of the innovation intermediary that had an established network of potential participants for the innovation contest. Alongside an open invitation for the target group, the innovation intermediary contacted potential participants directly, which ensured a relevant reach for the innovation contest.

4.4.2 Challenge set-up

Another challenge mentioned by a few interviewees was that the innovation contest challenge could have been formed in a way that did not appeal to the whole target group or was not considered relevant by them. *"It might be that your message or the contest is not formulated in an attractive way, it may somehow seem like you [the participants] don't understand that this is relevant for you. - - it might feel like it is too complicated, too time-consuming"* (Interviewee 6). The organization may strongly view the challenge from its own point of view and therefore formulate it in a way that attracts like-minded industry experts instead of problem-solvers from related but different industries even if that was the objective.

As expected from the literature review, the level of understanding of participant motivation was also reflected in the quality of the innovation contest challenge. Majority of the organizations emphasized that prize was considered one of the most important motivators for the participants. The contests gave the winner or winners a prize between 10 000€ and 1 million €. However, after the contest some organizations had come to the conclusion that their assessment on participant motivators was not accurate. *"You did not initially think that it would not reach [the target group]. You just thought that this is an amazing thing; surely, they will participate when we have good prizes"* (Organization 1). The prize was not as significant of a factor for attracting the participants as initially thought.

4.4.3 Brand value

Many of the organizations considered their brand value as a strong determinant of attracting relevant participants. The brand value was thought to help participants, especially aspiring entrepreneurs, to develop their contribution after the contest by bringing valuable contacts and visibility in the industry. There were organizations who considered their brand strong enough to not need extra efforts in marketing to attract the participants as it would provide participants with value on top of the actual innovation contest prize. *"Of course [this organization] is a strong actor in this area - - which is a good motivator for company actors to start collaboration since it opens the market and gives opportunities to start piloting"* (Organization 4). *"[this organization] is a big actor in the field, making us attractive to the participants"* (Organization 2).

On the other end were organizations that considered they had challenges in reaching the target group because the participants did not consider the particular brand would provide enough support after the contest. *"Probably the reason for not getting that many participants was that [this organization] and brand - even though well-known for Finnish people if you think about brand awareness studies - is not necessarily known or visible in the innovation field. So then maybe it did not reach the whole target group, or they did not consider the brand value that you could get from us by winning this kind of a contest was that strong"* (Organization 3).

4.5 Acquisition of contributions

As discussed in the literature review, the knowledge acquisition stage has a significant impact on the knowledge management activities and challenges in the latter stages. To understand this stage, the interviewees were asked to describe the ways they planned to acquire the contributions and their views on how the knowledge acquisition stage went in reality.

The acquisition stage of contributions was affected by the allowed forms and types of contributions, contest design and shared knowledge as well as the level of offered participant support, which will be discussed in the following subsections. The organizations that were looking for a wide variety of different types and forms of contributions expected high quality variation between the contributions. While this enables the organizations to acquire a wide variety of new knowledge, it also presents them with several knowledge management challenges in the review and assessment stage discussed in the next subchapter.

4.5.1 Form and types of contributions

All of the organizations asked for the contributions either fully in an electronic form or by using both online and offline channels. Also, the format restrictions of the sought contributions varied greatly. Whereas some organizations had a strictly formulated electronic form asking specific questions from each participant, some allowed the submissions in any format including, for instance, text documents, videos and physical prototypes. *"We were thinking about an alternative that would be more convenient in the*

assessment stage: a structured form, but then concluded that it would be too restricting [to the participants]" (Organization 5). Furthermore, one of the contests was fully co-creative between the participants and the organization and thus after initial assessment based on online information, it was conducted by offline interactions and pitching on site.

The contribution types sought also had large variety between the contests. Whereas some contests allowed for more abstract concepts or ideas about products or services, some focused on looking for forms of collaboration between the participant and the organization, or an offering that could be brought to market with relatively little further development. *"It was allowed to be on any level, just a concept, a prototype or a written idea. We did not restrict it at all"* (Organization 1). One interviewee also mentioned that getting concrete solutions to the challenge is often difficult since participants enjoy analyzing the innovation contest challenge and issue at hand but may not have the competence to provide a concrete solution to it.

4.5.2   Contest design and shared knowledge

As also discussed in the previous subchapter, according to the interviews, contest design also plays an important role in acquiring relevant contributions. To formulate and communicate the challenge request, multiple organizations shared background information and knowledge with the participants. *"In practice, in the innovation contest challenge listed the challenges [in this industry] and then we told what kind of criteria will be used to evaluate the contributions"* (Organization 4). The aim of sharing background knowledge was to guide participant thinking in a way that would provide relevant, usable contributions to the organization.

The methods to share knowledge included articles about global megatrends and examples of their effects, as well as information about previous innovations that were brought to market by that organization. This knowledge was typically shared already in the request broadcasting stage. Some organizations went further by providing extensive information about the current ways the organization is operating when the contest was running, and participants were preparing their contributions to help adjusting them to fit that specific organizational environment.

4.5.3   Participant support

There was variability in the amount of support given to the participants before and during the innovation contest. *"We had this designated coach who refined the pitch presentation together with the participants"* (Organization 5). Some interviewees mentioned they put a lot of effort into giving support to the contestants in order to help them create the best possible contributions. The mentioned forms of support included lectures and opportunities to discuss with a wide number of internal employees, mentoring for, for instance, pitching and presenting the ideas, organizing application clinics, offering service hours via phone to answer possible questions about the submissions or writing blog posts about how to make a good application. This was considered by the interviewees to improve the quality of the contributions while also helping the organization to interact more with the participants and thus the innovation contest to be more motivating for the participants.

Some organizations, however, did not provide the support but relied on the material provided to the participants, which was mainly formed by the background information and evaluation criteria shared in the innovation contest challenge communications. The nonexistence of participant support was mainly caused by the lack of resources, especially time.

4.6   Review and assessment of contributions

To understand how the organization went through all the acquired contributions, the interviewees were asked about the review and assessment processes and possible successes and challenges during them. Even though all of the organizations used a jury as an evaluation method, the juries utilized a variety of methods in reviewing and assessing the contributions, largely dependent on the allowed contribution forms, assigned resources and technologies. Most of the organizations had used pre-determined evaluation criteria, rubrics as well as face-to-face discussions to assess the contributions. Additionally, in contests with a larger number of contributions, pre-screening was often completed by internal employees, such as the innovation contest project team, to filter out contributions that did not meet the submission criteria.

The first subsection will describe the assessment resources. Secondly, jury evaluation will be discussed in more detail. The third subsection concentrates on the challenge over-

search causes in the evaluation stage and the last subsection discusses issues that emerged relating to the effect of legislation.

4.6.1 Assessment resources

It was collectively acknowledged by most interviewees that the assessment stage is resource-intensive and requires a lot of time and effort. *"It was surprising to the judges that it is very laborious, the applications were reviewed really thoroughly"* (Organization 4).

Especially when the number of contributions grew, several organizations identified the need for pre-screening with an internal project team in order to save the jury's time for the most relevant interviews. Pre-screening was considered both positively and negatively. It was mentioned to save time and improve the efficiency of the assessment process. However, it had also caused some confusion among jury members that did not agree with the pre-selected contributions. *"- - when we sent the pre-screened applications to the judges, they wondered why the amount to be judged was so small, why they [the contributions] weren't the right kind and why some of them were of such low quality. But like I mentioned, the contributions were really diverse and when we went through the whole repertoire with the jury, they realized that we had selected the right contributions"* (Organization 3). To solve this challenge, some organizations used completely external, paid juries to which the organization had allocated full-time assessment work. These juries consisted of industry influencers and entrepreneurs, for instance.

4.6.2 Jury evaluation

All of the organizations used a jury as the assessment method. While many of the organizations used only external judges, some had only internal judges and some a combination of internal and external judges. The motivation behind having only external judges was to broaden the usual way of thinking in the organization. It was acknowledged that the organization has a strong point of view and can therefore get stuck in one way of assessing the ideas: *"We were probably looking for external engagement, the perspective of industry outsiders and this kind of openness. That we don't just fumble ourselves because then you tend to lose sight"* (Organization 5).

It was also recognized by the organizations that the different backgrounds of the judges affected the assessment stage. Firstly, especially when having external judges, their work history was diverse as well as the field in which they are specialized, which affects their knowledge in the specific challenge and their perspective. *"They obviously could not necessarily take the feasibility [of the contribution] into account because they are not an expert in that field"* (Organization 5).

The diverse backgrounds and expertise were, in some cases, supported by experts outside the jury that helped to interpret and understand the more complicated and specific attributes in the contributions. *"We also used technical specialists to report and explain some of the applications that were really technical to help the judges"* (Organization 4).

Secondly, each judge, no matter if external or internal, have individual motivation for participating. Whereas some might not benefit from the winning contribution at all, some may get direct value of them, which suggests that the basis for assessing the contributions will be different. *"What these companies [the judges work in] do every day is very different, and their role in the company is very different, so that shows in what they think is a good thing"* (Organization 5).

Likely due to these two factors, it was also recognized that had the organization included only internal employees in the jury, they would have selected a different winner. *"[had the internal contest management group made the selection] I think the winner would have been different. - - [since] the focus of the external jury was largely on the unpleasant financial attributes"* (Organization 5).

4.6.3 Over-search

Common to all of the organizations was that the number of contributions was in most cases what was expected, even though they would have been happy to receive even more. The organizations that received a large number of contributions had prepared for it already when determining the breadth of the contest challenge. Therefore, the issue of over-search in terms of amount was not clearly visible in the interviews.

However, in some organizations the reason for over-search was the high variety of contribution forms and types. It resulted from the innovation contest design decisions, of which the open target group, broadly defined challenge and the high degree of elaboration describing the allowed contribution types. *"The challenge [in assessment] was probably*

related to the fact that we consciously wanted to formulate the challenge very openly and widely. But that obviously lead to tremendously diverse applications and comparing them with each other proved to be challenging" (Organization 4). Especially the innovation contests that aimed at innovative outcomes and required specific knowledge and expertise from the participants in order to receive high-quality results faced challenges due to over-search in the review and assessment stage. The wide variety of contribution types required vast resources to be prepared and translated for jury evaluation, specifically in cases where the expertise level of the judges varied.

4.6.4 Legislation

An aspect that arose in multiple interviews was legislation and its effect on the whole innovation contest process. Since the interviewed organizations included both private, public and non-profit organizations, they viewed legislation differently. In the public sector, legislation not only set restrictions for the contest design but also to the assessment methods. For instance, interviewees mentioned the assessments needed to be anonymized before judged.

On one instance, the judges weren't able to assess the financial feasibility of the ideas due to legislation, either, which could hinder the most optimal assessment and selection of the best idea. *"So the jury did not know or could not take the price of the contributions into account, it was out of the scope of their work. It was a bit of a challenge since comparing what we could get with what prices and costs could have been useful in jury work"* (Organization 4).

Even though handling the legislative aspects of the innovation contest is not directly linked to knowledge management capabilities, it sets more challenges for internal knowledge sharing and external knowledge acquisition from experienced contest organizers according to the interviews, when compared to organizations with less legislative restrictions. Additionally, the restrictions caused by legislation should be taken into consideration in the contest design and development stage, in order to be able to plan the evaluation criteria, contribution requirements and review and evaluation processes effectively.

4.7 Exploitation of contributions

To answer the main research question, the primary focus in the interviews was understanding the exploitation processes and activities completed in this stage. The themes that appeared in the interviews were exploitation plan and internal attitudes, which will be discussed in the first two subsections. Lastly, the actual outcomes of the innovation contests as they were at the moment of the interviews, will be briefly described.

4.7.1 Exploitation plan

First of all, the plans organizations had for the execution phase after the contest largely varied. While some had a clear plan and allocated managers to take the projects forward, some had made a decision not to use any of the organization's own resources to further development. The execution plan largely depended on the main objective of the contest. The three contests with the clearest innovation objective that aimed at piloting and launching a new offering had the most thought-out execution plan. In these organizations the execution plan had been evaluated realistically already in the innovation contest development stage. *"- - Already from the start we were thinking about what happens after the contest, so that it is not just an expensive marketing trick." –* (Organization 2).

The organizations that did not have strong innovation objectives had often not allocated resources for further development of the winning contributions in the execution plan. *"The ideas were great for many reasons, but in no way something a company could take as it is and often it is unfortunately about the money. Even though technically we could [produce it], it is not a feasible business case, and even if it was big and saved the world, it would have required a lot of refining. - - No one's expectation here was that it [the winning contribution] would be something that we could just start producing"* (Organization 5).

Some contests also had a plan for the initial stages of the execution, where their aim was to sell or take the idea further into another organization, after which their own role would largely diminish. In this stage the ability to market and sell the idea as well as to ensure it will not dramatically change was considered important. *"We will probably face challenges in execution to make it [the idea] remain. - - we would need to find a visionary executor who respects the ideas and sees their greatness, that they are something special. -*

- we see the challenges when we find the executor and see their terms for execution" (Organization 1).

It was acknowledged that in many cases the beginning stages of the innovation contest have so many factors to consider and decide regarding practicalities of designing and launching the contest that the amount of time and attention for planning execution might be limited. *"It tends to be so that you have so many other things to plan in the beginning and are enthusiastic to kick off the contest that you might not think [the execution] through that much"* (Interviewee 6).

Additionally, a risk was identified regarding the intensity levels during the innovation contest process. *"In that stage when the contest ends, the intensity obviously decreases significantly. There might be some follow-up processes, but in reality, it is [considered to be] over"* (Interviewee 6). When the innovation contest ends, the intensity levels tend to decrease since the mindset of internal people involved is focused on the fact that the contest itself is over. At that point a clear initial execution plan plays a significant role since it continues the process more fluently. However, it could be argued that during this phase of lowering intensity, creating a plan for execution would require extra effort. Post-contest process

Some organizations were faced with contributions that were not ready but needed further development after the actual innovation contest process had ended. Depending on the planned level of support to the post-contest development and refinement, the organizations had different views about the executability of the contributions. The level of post-contest support varied between no support to full collaboration agreements between the winner and the organization. *"We had a prize that was not just money but a collaboration agreement, so we were committed from the beginning to start a collaboration with one or more winners to develop it [the contribution] further together"* (Organization 2). *"A clear limit was that our resources would not be used for giving support or this kind of further development that is done in many innovation projects. - - it was discussed in our management group and board of directors and we concluded that we don't have that kind of human resources, because it could be very labor-intensive"* (Organization 3). As was with the execution plan, the level of development support also correlated with the level of expected innovative outcomes. The organizations that expected concrete results had prepared for offering comprehensive support or making official agreements for further development with the winners.

However, when support was not provided for the winning contributions afterwards, the organizations were often looking for more ready ideas and capabilities to be able to take it further themselves. *"Among that [fulfilling contribution evaluation criteria], the winners need to have the resources and knowledge about productization and further development in order to make it [the contribution] a finalized product. You need to have design vision and understand the processes. So those did definitely play an important role [in selecting winners]"* (Organization 3).

What could potentially help organizations to avoid especially the resource-related the execution challenges is reallocating resources between the prize and post-contest support. *"For effectiveness [of the contest], it would be wise to allocate a certain amount of resources for further development support already in the beginning. Maybe by decreasing the prize a little but having more of the support"* (Interviewee 6). By allocating less to the prizes and instead increase the level of support, the concrete outcomes and effects of the innovation contest in general could be greater.

The innovation contests in general were considered a large financial commitment by almost all organizations. A reason for further development being challenging was that piloting and exploiting the new ideas was considered financially challenging. *"Why the renewal is so slow is because only piloting, meaning that we move to a larger scale with for instance a new material to be tested, it takes tens of millions of euros, so at that point it must have gone through many stages so that someone invests that much money"* (Organization 5).

4.7.2 Internal attitudes

In multiple interviews, the interviewees mentioned the impact of internal attitudes on the success of contribution execution. Firstly, it was acknowledged that the innovative culture affects the way the innovation contest is seen as a whole, thus also the attitudes towards the winning contributions. *"[the attitudes] are probably divided in a way that there is a certain group of interested, innovative people and then there are more of those traditional people who don't quite see the significance. - - there is a lot of culture change at the same time and therefore I think it is even more important that we can promote how the work has gone with the winners and that this [contest] is very concrete and not just a big marketing trick. [The attitude is] positive, but it is a big company, so it surely fits many different kind*

of opinions" (Organization 2). *"Of course, in an organization with smart people, there is always some questioning about why this [the innovation contest] is done, but once the organization's interests in these pilots were discussed, in my opinion is that it got wide support, people think this is a good thing and it makes sense to do this"* (Organization 4).

Secondly, the overall willingness to follow and execute the ideas after the innovation contest was recognized to be a factor impacting the outcomes in an organization. The internal attitudes also affect the level of resources allocated to post-contest activities, which in turn has an effect on engaging in them. *"If the [innovation contest project] core team in the organization is really small and it formally ends and they have not allocated any resources to follow-up, then other work takes over. - - It hugely depends on what the possibilities and willingness is in the organization to follow the [winner] projects"* (Interviewee 6).

Enabling change and a more systematic approach to supporting further development of the ideas to produce concrete outcomes such as new product or service launches was recognized to require a wider change in the whole business model. This, in turn, can be argued to require a wide change in attitudes especially towards open innovation. *"I would say that starting [the innovation contest] and developing it is quite easy compared to genuine change - - the larger question is how do we genuinely change our business so that we can collaborate with the winners in an agile and dynamic way to create something completely new"* (Organization 2). The organization needs processes that support a more agile approach to bringing offerings to market. A more agile approach requires changes in current processes and the way in which people and the organization as a whole operates.

4.7.3   Contest outcomes

Even though there were several challenges along the innovation contest process, none of the interviewees expressed that they had failed to achieve the objectives they had set for the contest. However, the level of expectations affected the way the outcomes were seen. The organization that aimed at supporting the creation and maintenance of external networks and recruitment activities perceived the contest as a success as it had provided the winners of the contest with new jobs in the partner organizations.

Many of the organizations that aimed at creating new offerings had managed to step to the next stage and made agreements for further development of the ideas. Even though

the processes were still ongoing, the organizations saw a lot of potential and considered the objectives realistic to be achieved.

Finally, some organizations were already at the end of the piloting stages, ready to move forward with the market launch. Even though there was still uncertainty about the final outcomes, none of the organizations that had an execution target had faced a situation where further development of the contributions was not considered worthwhile. The overall experience was collectively described positive, and as one of the interviewees said: *"[The contest as an experience] was really empowering in a way that we got a wonderful activity boost and make-it-happen atmosphere here [at our office] during the contest, and a feeling of 'everything is possible'. And it was a great energy boost at least for me and I suppose for the whole team, and it was kind of an upbeat, great experience."* (Organization 2).

4.8 Conclusion of findings

The findings of this research provide answers to the main research question and the two sub-questions set in this thesis. The need for acquiring external knowledge was strongly acknowledged in each of the interviewed organizations. Digitalization disrupts all industries and requires more systematic ways of innovating to remain competitive, and innovation contests were considered a feasible method for creating these processes. As assumed in the literature review, the organizations had a variety of motivations and objectives, and the target of improving innovative performance varied greatly between organizations.

The findings present several knowledge management challenges along the entire process that organizations face when organizing and managing innovation contests. The findings suggest that management support and innovative culture are prerequisites for initiating the innovation contest. To successfully develop the contest for an organization's purposes, resource allocation, benchmarking, internal commitment and clarity of roles appeared to pave the way for creating stakeholder networking and relational capabilities required for efficient knowledge acquisition. Reaching industry outsiders as target group was considered one of the most prominent challenges, requiring cross-functional efforts within the organization. Additionally, organizational factors such as brand value were considered a determinant for attracting participants, along challenge set-up and other

participant motivational factors. The organizations used a variety of methods to acquire contributions, but what commonly emerged was the impact of participant support, contest design and shared knowledge on contribution quality. While all of the organizations used jury assessment, several knowledge management challenges were identified in the evaluation process as well. Selection bias is a risk caused by different levels of expertise and sets of objectives among the judges, and over-search causes attention allocation and resource-related challenges that hinder efficient assessment and decision-making. Additionally, legislation emerged in several interviews as a factor affecting knowledge management in the evaluation stage especially in the public sector organizations.

The findings revealed several challenges in the exploitation stage of an innovation contest, out of which internal attitudes, the level of planned post-contest activities, managing the decreasing intensity levels and resource-related factors appeared the most significant. The findings suggest that the existence and specificity of an initial execution plan has a significant impact on overcoming the challenge of exploiting the contributions of an innovation contest. The execution plan should reflect the organizational objectives and be the more specific the more specific outcomes are expected. Determining clear post-contest action plans, level of participant support offered and responsibilities enables the process to continue without interruptions after the winners are selected. The execution plan decreases the risk of the process slowing down due to decreasing intensity levels.

5 Discussion

This chapter discusses the findings from the perspective of the theoretical framework that identified three gaps in the innovation contest process that organizations might face regarding knowledge management. Based on existing studies it was expected that organizations have sufficiently recognized the value of external information and identified an opportunity in open innovation activities, which was confirmed in the interviews. It also supported the initial focus of this research on the subsequent stages in the innovation contest process, which this chapter primarily discusses.

This chapter is divided into five subchapters. The first subchapter will discuss the first gap between contest development and stakeholder involvement. The second subchapter focuses on the second gap between knowledge acquisition and evaluation and selection. The third subchapter explores the third gap by describing the challenges and capabilities related to the stage between the evaluation and selection phase and the knowledge assimilation and transformation phase that then lead to knowledge exploitation. The fourth subchapter sums up the discussion and in the fifth subchapter the topics for further research will be discussed.

5.1 Gap 1

The first gap is between contest development and stakeholder involvement, in which the organization needs to be able to attract the relevant external stakeholders and maintain relations with them.

Based on previous literature it was assumed that to overcome the first gap, organizations need to have a thorough understanding of its own motivations, objectives and current capabilities as well as the motivation and objectives of participants in the innovation contest. However, several new factors affecting the ability to overcome the first gap emerged in the interviews. The findings are divided into two main themes: understanding organizational motivation, objectives and capabilities, and building new networks.

5.1.1 Understanding organizational motivation, objectives and capabilities

In order to successfully set up an innovation contest challenge, the organization is required to understand its own motivation, objectives and current capabilities. Firstly, understanding objectives gives the organization a realistic view of the needed efforts in order to reach them. As Laursen & Salter (2006) state, innovation search demands large investments in time and resources, which was also noticed by each of the interviewed organizations. Some of the interviewed organizations clearly understood from the beginning that the innovation contest had no practical innovative agenda or not enough management level support. This sets the expectations of the outcomes on a level in which the limitations of activities during and after the innovation contest can be justified. For instance, when the organization does not aim at further developing and launching some of the received contributions, it is justified that the resources in contest development are directed towards marketing and external visibility instead of execution. However, when the organization is motivated by the market potential of the contributions, more resources should be allocated into planning a realistic challenge, the most optimal target group and developing a clear contest process from request set-up to execution. Mortara et al. (2013) also argue that the objectives set for the innovation contests are often too vague or ambitious. It appeared in the interviews that if the organization did not have a clear vision of the purpose and target of the innovation contest, some necessary activities were left out whereas some resources were used on processes that did not bring value.

As argued by Lampel et al. (2012) and Laursen & Salter (2006), many factors affect the organizational motivation, including the organization type and the external environment. The organization type had a large impact on the overall motivation and objectives. Whereas corporations likely aim at commercial objectives and actual product launches, the public and non-profit organizations have a larger variety of goals that in the interviews ranged from supporting partner organizations in their innovation activities to pushing the innovativity of the market forward, which is a great example of a broad innovation agenda as discussed by Lampel et al. (2012). Interestingly, however, organizations that considered to lack administrative flexibility and resources also relied in broad agendas, even though Lampel et al. (2012) suggest the opposite. This may be one explanation for exploitation challenges in latter stages.

Additionally, the way in which the organization views its role in the innovation field had an impact on the motivation for innovation contest. If the organization views itself as a slow adopter of innovations created by others, the motivation for acquiring and developing completely new innovations could be argued to be lower. This would suggest the organization leans more towards incremental process innovations if it sets up an innovation contest, which was also supported by one of the interviews.

The impact of external environment in the innovation contest motivation was collectively seen in all of the organizations, but opposite to existing literature, no differences in the pressure to innovate between industries were identified in the interviews. The megatrend of digitalization was a large driver behind open innovation activities across all industries. It was also seen by the organizations that the markets are disrupting and that there is a growing need to understand the changing behavior and new needs of customers to stay competitive in the long-term. However, not only the acquisition of external knowledge but also the changes in internal attitudes to enable long-term success were seen as a driver behind organizing innovation contests.

5.1.2 Building new networks

There is a growing need to acquire knowledge outside the borders of the organization's own industry, which encourages the utilization of innovation contests. The need might be explained by the fact that customers have higher and ever quicker changing demands that require understanding the behavior not only during the stage of consumption where the organization operates, but also understanding what happens before and after. In most interviews the capability of building new networks appeared to be a significant challenge but simultaneously a key factor helping to overcome the first gap. The capabilities that seem to determine an organization's ability to build new or widen the existing networks according to the findings include the ability to design the request, understand target group motivators and share cross-functional knowledge within the organization. However, organizations often lack capabilities to plan and build the required steps in the innovation process (Kelly & Storey, 2000; Cooper, 2008; Cooper, 1990). According to the findings, benchmarking to existing innovation contests and getting support from innovation intermediaries were methods to overcome the challenges resulting from lack of capabilities in creating the capabilities and processes for network building.

Stakeholder networking and relational capabilities are considered crucial in existing literature in order to attract the target group (Kazadi et al., 2016; Laursen & Salter, 2006). Moreover, as argued by Piller & Walcher (2006), listening to only the current customers can decrease innovativity since they have a tendency to continue old procedures. While literature primarily focuses on the challenge of mapping the relevant stakeholders, the challenge that arose in the interviews was rather how to reach these stakeholders. The interviewed organizations wanted to reach groups of people that they normally do not collaborate with by setting open target groups, allowing for a variety of inputs and a wide solution space. According to existing literature, such an open challenge can, however, be a challenge of its own since not all knowledge is usable (Risom Jespersen, 2018), which can increase the cognitive distance between new and existing knowledge in the organization and diminish the ability to learn from the crowd and integrate the acquired knowledge into the innovation system. Additionally, organizations typically have excellent networks and networking capabilities in their own industry but creating completely new connections to relevant industry outsiders is challenging. The organization needs to understand what motivates the target group and how to attract them. However, organizations tend to view the challenge from their own perspective, which results in the challenge question being formulated in a way that does not attract industry outsiders.

As was indicated by previous literature, understanding whether the target participants are intrinsically or extrinsically motivated seems to play an important role in overcoming the first gap. For instance, organizations have a tendency to overemphasize the importance of the prize money, leading to diminishing attention to other relevant intrinsic or extrinsic motivators.

Previous theories also suggest that contest design plays an important role in overcoming the first gap, and the organization needs a framework consisting of the processes that will take place in order to translate the objectives into an actual contest (Lampel et al., 2012). Especially the importance and challenges in request set-up appeared in the interviews. The request, in this case innovation contest challenge, needs to be built upon the understanding of the target group's motivation. This ensures it is understandable and feels relevant for the right participants, and that way promotes and encourages participation.

Secondly, creating connections between the organization and new external groups of people requires cross-functional knowledge within the organization, especially between the

innovation contest team and the marketing unit. As discussed in previous literature, internet and social media have enabled an inexpensive way to reach external knowledge sources (Piller & Walcher, 2006; Hofstetter et al., 2018), but identifying the most optimal channel to engage with the target group is challenging for managers and decision-makers. In the interviews, marketing-related knowledge is seen as a requirement for engaging with the right stakeholders and attracting them in the right channels. However, marketing expertise and knowledge often lies in a different unit in an organization than knowledge about innovation in general as well as the contest-specific knowledge. Creating processes and internal connections to share knowledge and plan the request broadcasting activities can therefore be argued to be one of the prerequisites to overcome the first gap.

Lastly, what arose from the interviews that was not covered by the theoretical framework was benchmarking and knowledge gathering from contest experts and other industry managers with experience in contests or judging them. First of all, the organization needs a strategy on whether the contest infrastructure will be built in-house or outsourced to an innovation intermediary (Ahonen & Lietsala, 2007; Nambisan, 2002). According to the interviews, the ability to recognize the current organizational capabilities enables the organization to gather a sufficient amount of knowledge to either design and develop the contest by themselves or helps them recognize the need to acquire existing knowledge and expertise by utilizing an innovation intermediary. Thus, identifying current capabilities determines the organization's ability to successfully manage the latter stages of the process and focus organizational resources more efficiently by avoiding re-inventing the wheel.

5.2 Gap 2

The second gap is between knowledge acquisition and evaluation and selection. According to previous literature, the key determinants for overcoming the gap include overcoming the challenge of over-search, attention-allocation, decision-maker involvement and the challenges of ensuring high quality of ideas and creating the processes for idea evaluation. It was identified, that overcoming the second gap plays a significant role also in the third gap in terms of knowledge assimilation and transformation due to the selection of the winner contribution.

These individual challenges appeared in the interviews and the three main themes are discussed individually in each subsection: contribution quality management, knowledge interpretation and selection bias and internal knowledge flow.

5.2.1 Contribution quality management

Contribution quality and factors affecting it appeared to be the first challenge in overcoming the second gap in the innovation contest process. The quality can be affected by a variety of factors such as the selected target group, request set-up and design as discussed earlier, over-search and participant support activities.

As was argued by Laursen & Salter (2006), the scope of the innovation contest determines the stages in which external knowledge should be acquired. For radical innovation, deep knowledge should be acquired in the early stages of the product life cycle whereas for incremental innovation external knowledge is needed from a larger number of sources in the later stages of the life cycle. The majority of the interviewed organizations aimed at acquiring a wide variety of contribution types from a large pool of participants by allowing a broad challenge, thus instead of depth, especially the scope of knowledge search was vast. This indicates a focus on a more incremental innovation. The amount of contributions that was acquired seemed not to create a challenge for most of the interviewed organizations, as it was either considered smaller than the assumption or because they had prepared to go through and assess a large amount of contributions. The challenge of over-search was, however, visible in another way. Not specifying the target group, the contest challenge or contribution types often results in high variation in contribution formats and contribution quality, as could also be indicated from the study of Blohm et al. (2013). Due to attention allocation constraints recognized also in previous literature (Kim et al., 2016), over-search causes challenges in comparing the contributions and assessing them objectively.

Another challenge as well as an opportunity relating to organization's relational capability in innovation contests is the level of participant support during the contest, which has not got much attention in existing literature. The organizations that offer participant support shift resources from formulating the contest challenge and sharing a sufficient amount of information up front in order for the contestants to be able to create high-quality results towards real-time interaction between the contestants and the

organizer. Learning and self-improvement are examples of the intrinsic participant motivators (Lampel et al., 2012; Füller, 2006) and even when they were recognized by the interviewed organizations, activities to support and leverage that motivator were often times not included in the planned due to resource-related challenges. Several methods for offering support before and during the contest appeared in the interviews including application clinics, service hours and events. These methods are considered to assist participants in producing higher quality contributions and encourage participation. However, even though these support channels are considered useful, organizations might face resource-related challenges that hinder the ability to offer support.

5.2.2 Knowledge interpretation and selection bias

As identified in existing literature, there is a variety of options for assessing the contributions and selecting the winner in an innovation contest. However, in each of the interviewed organizations, a jury was used in the evaluation phase. Therefore, different evaluation methods cannot be analyzed further in this research.

The juries consisted of internal, external or both internal and external judges selected by the innovation contest teams. The main purpose of including external judges mentioned by the organizations was to avoid internal selection bias and to get external perspective. Most organizations acknowledged the risk of assessing the attributes of the contributions from a perspective that is too narrow in order to recognize something new and innovative. This is also recognized by previous literature that argues that prior knowledge is a strong determinant of absorptive capacity (Cohen & Levinthal, 1990) since it affects how the organization can learn from the crowd and thus how knowledge is interpreted and transformed.

As discussed earlier, over-search hinders the decision-makers' ability to evaluate and select the best contributions and diminishes the organizations absorptive capacity. Based on the interviews, the vast variety of contribution types and quality demanded significantly more time, effort and expertise than standard form high-quality contributions. In some cases, this led to utilizing a completely external jury that did not include any internal decision-makers crucial for post-contest development and execution processes. This supports the argument of Mortara et al. (2012) that due to time constraints, getting key decision-makers to participate in the evaluation and selection processes is one of the

biggest challenges in innovation contest success. It was also explicitly mentioned in several interviews that the organizations may have ended up with a different assessment of the contributions and a different winner if it had included only internal decision-makers in the jury. This indicates that outsourcing the whole evaluation stage to external judges has a risk of selecting a contribution that is not accepted by the key decision-makers in the organization that are responsible for its further development.

There were also knowledge management challenges in jury assessment overall. The challenges mainly relate to the varying backgrounds, expertise and objectives of judges especially in juries with external judges. While different backgrounds and experiences provide a more comprehensive assessment of the ideas, it may complicate the assessment process overall. Additionally, the way different judges benefit from the winner contribution likely varies. This results in judges having different objectives, which in turn creates different starting points to the interpretation and evaluation of contributions. What further complicates the assessment is the variety of contributions. It is likely that each of the judges directs their attention to different aspects and value each of them differently. Reaching a unanimous decision could be therefore argued to be more challenging and time-consuming. To form a coherent decision that could be taken forward in the specific organization, these varying evaluations based on different expertise should be distributed to create shared understanding of each contribution. Otherwise the organization faces a risk of selecting an unsuitable contribution that cannot be transformed, absorbed and further developed in that environment. Additionally, the more disruptive the contributions are, the more difficult it is to recognize their value beforehand (Remneland Wikhamn, 2013), suggesting that the more significant role a clear evaluation criteria plays.

5.2.3   Internal knowledge flow

While innovation contests are an efficient method for recognizing and acquiring new knowledge, in order to be integrated to the existing knowledge base in the organization it needs to cross several internal borders (Kim et al., 2016). Kazadi et al. (2016) also argue that creating routines for information sharing within the organization is a key obstacle in stakeholder knowledge management. First of all, the technical knowledge sharing platforms need to be in place. Most of the organizations in this research used online media as the contest channel and collected the contributions electronically. However, some allowed a wide variety of online formats whereas others allowed offline channels as well,

including physical prototypes, for instance. The more channels and contribution types are involved, the more the organization needs technical resources for sharing them. With technological platforms, there also needs to be a clear plan for who receives the access and when. The more stakeholders are allowed the access to view the contributions, the larger the evaluator network becomes, making the process more complex to manage.

As discussed by Cohen & Levinthal (1990), when the externally acquired information is substantially different than the existing internal knowledge, employees might end up in a gatekeeper's role in which they transform the information for the rest of the organization. Managing the risk of gatekeepers affects the organization's realized absorptive capacity. Gatekeepers appeared in the interviews especially in the innovation contests that aimed at more finalized contributions that were technically thought through and in innovation contests that received a large amount of contributions.

Firstly, some organizations used internal specialists to interpret, explain and transform specific parts of the knowledge in the contest applications for the jury to then re-interpret and evaluate. This knowledge transformation method is used since the judges in most cases have expertise in different specialty areas and it could not be expected that they can reliably assess all the attributes of the innovation contest applications. While this approach can be argued to effectively support learning from the crowd, it also presents risks. In these situations, the knowledge is likely viewed and explained from a specific viewpoint by the specialist, and knowledge relevant for someone with a different background could be deleted in the process. This might shift the balance from listening to external opinions more towards listening to internal needs, which in turn could lead to selecting a contribution less innovative. It might direct the way the external judges evaluate the ideas and therefore diminish the benefits of using external expertise in assessment.

Secondly, many of the interviewed organizations had a pre-screening stage in the evaluation process in which an internal group of employees evaluated the contributions to be then further assessed by the jury. This approach is supported by the theory of Ocasio (1997) that argues that the attention of key decision-makers needs to be concentrated on a limited amount of issues in order to achieve strategic advantage. Focusing on too many contributions can diminish the organization's ability to screen and evaluate the ideas (Laursen & Salter, 2006). However, it can also be argued that there is a risk of previous knowledge guiding decision-making in this stage especially when no external evaluators

are used in pre-screening. While the goal of utilizing external judges is to avoid selection bias, the pre-screening stage could diminish the benefits of an external jury. Pre-screening also decreases the transparency of the process, which in can cause suspicion regarding the selections done in the pre-screening stage among the jury members.

5.3 Gap 3

The third gap is between the stage of evaluation and selection and the stage of knowledge assimilation and transformation. According to existing literature, overcoming the third gap requires the ability to overcome internal resistance and the NIH syndrome, to avoid the substitution effect between internal and external knowledge sources and to have processes for internal knowledge sharing.

According to the findings, overcoming the third gap is strongly supported by the capabilities identified in the first and second gaps. Additionally, it is supported by internal commitment and by managing internal resistance. These capabilities are discussed in more detail in the following two subsections, including the factors of management support, connection to strategy, ability to maintain optimal intensity levels, organization-wide innovative culture and knowledge sharing processes.

5.3.1 Internal commitment

What is considered crucial throughout the innovation contest process from initiation to possible execution is the overall internal commitment level in the organization. Factors affecting internal commitment that was discussed by the interviewees are management support, building an optimal team, having clear roles and responsibilities and sharing knowledge internally to the whole organization.

Laursen & Salter (2006) discuss that the ability to recognize the value of external knowledge depends on external environment, past innovation experiences and successes, as well as future expectations. What is common for each of the interviewed organizations and what was expected in the literature review, is that the value and potential of using external knowledge is clearly recognized at least in the product development or innovation unit of the organization that has organized an innovation contest. As discussed earlier, the changes in external environment have proven to the organizations that innovation is a

requirement for remaining competitive, which supports recognizing the value of outside expertise. Furthermore, when future expectations are high, innovation contest are seen as a potential method for opening the innovation processes and acquiring new knowledge. Even if there was not necessarily either positive or negative past experiences in open innovation or no existing capabilities in the interviewed organizations to be able to effectively utilize external knowledge is low, a strong willingness to learn and develop those capabilities was clearly seen.

As assumed in the literature review, also the interviews confirmed that management support and commitment seem to be the biggest factors that determine the overall success of initiating and running an innovation contest all the way to benefiting from the submitted ideas in the long run. Top management had in most organizations acknowledged the fact that opening up the innovation processes demands a period of uncertainty and trial and error, and therefore it is also recognized that vast resources are needed in order to engage in the innovation contest activities and to achieve higher innovation performance.

Additionally, as recognized by Hjalmarsson et al. (2014), organization strategy significantly impacts the organizations ability to transforms ideas into innovations. Firstly, management and key decision-maker commitment seems to be the strongest when the innovation contest is directly connected to the organization's strategy. In one organization, the contest was tied to a larger culture change to become more agile and innovative in the future, and in another organization the contest supported the target of creating value by cooperating more tightly with existing external networks. Direct connections to organization-level objectives helps organizations understand the big picture and understand the value that organizing the innovation contest brings. Moreover, decision-maker involvement and the connection to strategy supports the selection of the most feasible contribution that has the potential of moving forward. Therefore, instead of remaining as a tactic PR-focused marketing campaign, the innovation contest is considered and managed as a strategic project with long-term effects resonating across the organization.

What did not appear among the innovation barriers in existing literature is the effect of changing intensity levels on attention allocation during the innovation contest process and especially in the post-contest process. Typically, the beginning stages of the innovation contest process are the most intense and motivating as the whole contest is ahead and the team can still impact the activities that are going to take place. It is likely that in the beginning, the execution phase is not considered a priority with all activities

from contest designing to marketing taking most of the attention. As in all long projects, the intensity levels can decrease going forward, possibly resulting in show fatigue at the end when the winning contributions have been selected. The gap between evaluation and selection, and knowledge assimilation and transformation can also be explained by this decrease in the intensity level. Internal commitment of the team and clarity of roles are a prerequisite for managing the intensity level. Especially since the innovation contests are often organized as an extra project above day-to-day work, the team needs to be motivated.

5.3.2 Managing internal resistance

Previous literature argue internal resistance and the not-invented-here syndrome to be key challenges in knowledge assimilation, transformation and integration into the knowledge base (Katz & Allen, 1982). However, acknowledging the risk or existence of internal resistance helps organizations in preparing for the open innovation activities in a way that supports positive outcomes. When the potential of open innovation and innovation contests is recognized, internal resistance and the NIH syndrome are not considered to completely inhibit open innovation but seen as something that could be changed. By actively engaging in open innovation activities and showing by example the substitution effect between internal and external sources of knowledge could be decreased. Recognizing the risk of internal resistance makes organizations set realistic objectives, determine an optimal scope for the innovation contest, share responsibilities and create teams with a strong willingness to commit to the process.

Selecting the right team and an optimal business unit for the innovation contest seem to be large determinants for the success of the execution process. When the organization acknowledges its limitations, it can find the most optimal place for the open innovation activities to grow. As was noted by one of the interviewed organizations, only specific business units within that organization were at a stage culturally where open innovation could have had any future potential. By starting the innovation contest activities there, the organization does not only create a good home for the selected contribution and its further development, but a good starting point to start growing the open innovation activities from.

Lastly, besides the innovative culture affecting overcoming the challenges in the innovation contest, the contest itself has potential in improving the culture over time. While the innovation contest often starts as smaller scale activities managed by a group of

the most open and innovative members of the organization, it has the potential of opening up innovation processes across the organization. Also, existing literature recognizes that not only the capabilities for communicating with external networks but also the capability to communicate inside the organization is a significant factor of absorptive capacity (Cohen & Levinthal, 1990). Acknowledging the current state of the innovative culture encourages the innovation contest team to share successes internally and take part in an organization-wide culture and process change. This, in turn, enables constantly more effective open innovation activities in the future.

6 Conclusions

The purpose of this thesis was to find out the knowledge management capabilities required from organizations to integrate ideas acquired in innovation contests into the innovation system and exploit them effectively. The study was mainly motivated by three issues: recent changes in the innovation landscape in organizations, low success rates of idea exploitation in innovation contest as well as the lack of research on knowledge management challenges organizations face during the process. The research questions this study aimed to answer were:

Which knowledge management capabilities an organization needs to exploit the ideas from an innovation contest?

> *(1) What are the key challenges in knowledge management in the innovation contest process?*
>
> *(2) What is the role of absorptive capacity in these challenges?*

The four key findings of this research provide answers to the research questions. Firstly, the three knowledge management gaps in the innovation contest process identified based on previous literature seem to reflect the reality in most cases. The theoretical framework enables the identification of knowledge management challenges and capabilities that support idea exploitation in innovation contests. Secondly, the findings demonstrate the importance of internal and managerial commitment as well as the capability to manage internal resistance in overcoming the third gap of assimilating and transforming the acquired knowledge to be exploited. Moreover, connecting the innovation contest to the organization's strategy and managing the intensity levels during the contest are identified to support these capabilities. Thirdly, the findings reveal that overcoming the first and second gaps plays a significant role in supporting knowledge exploitation. The ability to understand the organization's starting point in terms of motivation, objectives and current capabilities, and to build and extend networks form the base for overcoming the first gap of developing the contest to attract relevant stakeholders with valuable knowledge. Subsequently, creating processes for contribution quality management as well as managing knowledge interpretation and selection bias support overcoming the second gap of evaluating the acquired knowledge and selecting a winning contribution suitable for further development. Additionally, management support and innovative culture seem to be prerequisites for initiating and managing any innovation contest activities and are therefore

considered to affect the whole innovation contest process that aims at real innovation targets. Lastly, even though organizing an innovation contest and reaching innovation outcomes requires knowledge management capabilities from an organization, it became evident that organizing an innovation contest has the potential of improving these capabilities and thus innovative performance over time.

The results have both theoretical and managerial implications. The theoretical framework created in this study creates a novel link between the theory of absorptive capacity and the challenges identified in crowdsourcing literature. It forms a synthetization of probable knowledge management gaps in innovation contest processes. The research findings confirmed the challenges of, for instance, building new external networks, managing and assessing externally sourced knowledge and creating internally committed innovative culture, and thus the existence of gaps 1, 2 and 3, which indicates that the framework was suitable for this population and can also serve as a basis for further research. The research also identifies several new knowledge management challenges, such as changing intensity levels, as well as knowledge management capabilities, such as benchmarking, and therefore provided new insights to the topic.

For management, the study provides three implications. Firstly, by bringing the challenges visible, organizations can better understand their existing capabilities and determine the suitability of implementing an innovation contest in their context and strategy. They can then design the contest and its activities to support the objectives and reach valuable outcomes. Secondly, identifying knowledge management capabilities gives managers an incentive to improve, for instance, the innovation culture, internal commitment and the activities supporting internal knowledge flow, not only to succeed in innovation contests or other open innovation activities, but simultaneously allow for generally higher innovative performance. Thirdly, acknowledging the process gaps help the organizers of innovation contests to direct their attention to plan the stages strategically to overcome possible barriers, which leads to overall higher innovative performance and thus greater competitive advantage over time.

6.1 Limitations and suggestions for further research

The limitations are linked to the suggestions for further research. First of all, even though the research participants consisted of a various group of different types of organizations

that provided deep knowledge about a wide range of objectives, distinctive innovation contest processes and diverse outcomes, the sample was relatively small compared to the amount of innovation contest organizers in Finland. The interviews displayed a wide range of performed activities, identified challenges and acquired or missing capabilities present during the contests, but it is still evident that a larger number of interviewed organizations could have provided new insights, improved the diversity of the appearing issues and therefore given a more accurate view of the topic. Moreover, it is likely that the seniority level and experience in innovation activities overall impacts the perspectives of individual interviewees. Therefore, it could be interesting to interview several employees on different levels of the same organization to look deeper into the differences in attitudes and perspectives on knowledge management challenges and capabilities. This would not only improve the reliability but also support creating generalizations and guidelines for managers.

Secondly, since this research was not limited to a certain organization type, a variety of attitudes, organizational capabilities and other factors emerged that seem to differ significantly between private and public organizations. The processes between different organization types organizing innovation contests could be compared to identify possible differences in the knowledge management and integration processes. This would provide better understanding about the challenges and capabilities required in each organization type, which, in turn, would better support the utilization of innovation contests in different organization environments. Furthermore, it would be interesting to compare the processes and challenges between large, incumbent organizations and small, emerging organizations.

Additionally, a topic that arose during this research was the impact of organizational culture throughout the knowledge management process. Not only does culture have a prominent impact on the initiation of open innovation activities, it affects the overall process until final outcomes and further development. Furthermore, the final outcomes have the potential to shape the innovative culture further. This relationship creates another topic for further research.

Lastly, while this research aimed to look at the whole knowledge management process of an innovation contest and focused on the relationship between potential and realized absorptive capacity, the capabilities underlying each PAC and RAC could be investigated further in the context of innovation contests.

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Appendices

Appendix A: Interview guides

PURPOSE OF THE INTERVIEW AND DESCRIPTION OF THE RESEARCH

The objective of this thesis is to find out ways in which organizations go through and exploit innovation contests and the contributions collected in these contests and identify the processes and possible challenges during these contests. These interviews are done anonymously and the final report will not include names of interviewees or the organizations they represent.

Interview Guide: Organization representative

BACKGROUND

How would you describe your background and role in this organization?

The role of innovations in the organization

1. What kind of role does innovation have in your organization?
2. In your opinion, what are the attitudes towards open innovation and externally acquired ideas in the organization?

Objectives of the innovation contest

3. In your opinion, what was the initial motivation for organizing this innovation contest?
   - Were there any secondary objectives?
   - Who or which part of the organization brought up the idea of an innovation contest?

Innovation contest preparation

4. Could you describe how the innovation contest was planned and prepared?

INNOVATION CONTEST IN PRACTICE

5. Could you describe in short, how was the innovation contest like?

Acquiring the contributions

6. What kind of participants were seeked and in what way did you try to reach and attract them?

- Did you succeed in this? What could have helped or hindered this?

7. What kind of contributions were seeked and in what way did you try to receive them?

   - Did you succeed in this? What could have helped or hindered this?

Assessing the contributions

8. Did you have a plan for how to internally go through and assess the contributions during and after the contest? What kind of?

9. How were all contributions went through and assessed in reality?

10. In which ways did you attempt to identify and select the best contributions?

Exploiting the contributions

11. What happened to the selected contributions after selection and why?

   - Did it follow the initial plan?

   - Were the initial submitters involved in further development of the contribution?

12. What kind of attitude was there in the organization towards the selected contributions?

   - Was there some kind of internal communications about the contest and/ or the contributions?

CONCLUSION

13. How was the experience as a whole?

14. What kind of challenges do you believe organizations most often face when organizing innovation contests?

15. In your opinion, should organizations organize innovation contests? Why?

Interview Guide: Innovation Contest Expert

1. How would you describe your role and experience of innovation contests?

2. In your opinion, what kind of motivators organizations have for organizing innovation contests?

CHALLENGES DURING THE INNOVATION CONTEST

3. How do organizations plan innovation contests?

- What kind of topics are in the main role?

4. Have you identified any challenges regarding the acquisition of contributions? What kind of challenges?

5. How do organizations go through the collected contributions?

   - Are there any challenges related to this?

6. How do organizations assess the contributions and select winners?

   - Are there any challenges related to this?

7. How do organizations act with the selected contributions after the contest?

   - Are there challenges regarding the exploitation of the contributions?

EXPERIENCES

8. In your opinion, what are the biggest internal challenges in the innovation contest for organizations?

9. Should organizations organize innovation contests?

Appendix B: Themes and codes in data

THEMES	EXAMPLES OF CODES
Innovation's role in organization	GROWING ROLE OF INNOVATION
	SEARCH FOR EXTERNAL INFORMATION
Attitude towards open innovation	LACK OF RECEPTIVITY
	CHANGE RESISTANCE
	MANAGEMENT INITIATIVE
Motivation for innovation contest	INDUSTRY-WIDE CHANGES
	CONSUMER BEHAVIOR CHANGES
	NEW STRATEGY
Main objective	OUT-OF-THE-BOX CONTRIBUTIONS
	EXTEND NETWORK
Secondary objectives	PUSH MARKET FORWARD
	PR, VISIBILITY
Planning, preparation activities and challenges	MANAGEMENT SUPPORT
	PROCESS LENGTH
Innovative culture	INTERNAL COMMUNICATIONS
	NIH-SYNDROME
Supporting capabilities	MANAGEMENT SUPPORT
	UNDERSTANDING OBJECTIVES
GAP 1	
Reaching and attracting stakeholders	MARKETING & COMMUNICATIONS
	TARGET INDUSTRY-OUTSIDER
Challenges in attracting stakeholders	UNDERSTAND PARTICIPANT MOTIVATION
	EXISTING CONTACTS TO TARGET GROUP
	CHALLENGE-SETTING
Knowledge acquisition activities	BROAD VARIETY OF CONTRIBUTIONS
	UNSTRUCTURED FORMAT
Challenges in acquisition	CONTRIBUTION QUALITY
	AMOUNT OF CONTRIBUTIONS
GAP 2	
Plan for assessment	EXTERNAL JURY
	PRE-SCREENING
Handling all contributions	EVALUATION MEETINGS
	EVALUATION RESOURCES
Recognizing, selecting contributions	EVALUATION CRITERIA
	JUDGE EXPERTISE
	LEGISLATION
GAP 3	
Current outcomes of contest	PILOTING
	RECRUITMENTS
Challenges in idea execution	INTERNAL COMMITMENT
	INTENSITY LEVEL
Contributor involvement	ORGANIZER HAS RESPONSIBILITY
	WINNER HAS RESPONSIBILITY