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INNOVATION THROUGH CROWDSOURCING: FACTORS INFLUENCING ENGAGEMENT IN IDEA COMPETITIONS

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ЗАЯВЛЕНИЕ О САМОСТОЯТЕЛЬНОМ ХАРАКТЕРЕ ВЫПОЛНЕНИЯ

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28.09.17

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28.09.2017

АННОТАЦИЯ

Автор	Семакова Елизавета Владимировна
Название ВКР	Инновации посредством краудсорсинга: факторы, стимулирующие вовлеченность участников в конкурсах идей
Направление подготовки	38.04.02 «Менеджмент»
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Научный руководитель	Самсонова Татьяна Александровна
Описание цели, задач и основных результатов	Целью данного исследования является доработка и перепроектировка модели, первоначально предложенной de Vreede, посредством выявления факторов, влияющих на вовлеченность участников. Метод множественных кейс-стади был выбран в связи с исследовательским типом работы, который объясняется новизной темы. Для анализа были выбраны четыре платформы соревнований: Lego Ideas, HyveCrowd, Innosite и Telegram InstantView Challenge. В результате двух раундов интервью были выявлены дополнительные факторы и новые категории участников. На основе результатов исследования была доработана модель вовлеченности. Спроектированная модель может стать полезным инструментом для создателей соревнований идей.
Ключевые слова	инновации, инновационный менеджмент, открытые инновации, краудсорсинг, конкурсы идей, вовлеченность

ABSTRACT

Master Student's Name	Elizaveta Semakova
Master Thesis Title	Innovation through Crowdsourcing: Factors Influencing Engagement in Idea Competitions
Main field of study	38.04.02 «Management»
Year	2017
Academic Advisor's Name	Tatjana A. Samsonowa
Description of the goal, tasks and main results	The purpose of this study is to identify factors influencing engagement, to re-design and finalize the model of participants' engagement in idea competitions initially proposed by de Vreede. Multiple case studies method was chosen due to the exploratory nature of the study which is justified by innovativeness of the topic. Four idea competition platforms were selected for analysis: Lego Ideas, HyveCrowd, Innosite and Telegram InstantView Challenge. As a result of two interview rounds, additional factors and new groups of stakeholders were introduced. Based on research findings, the model of engagement was finalized. The refined holistic model can be considered a useful tool for creators of idea competitions.
Keywords	innovation, innovation management, idea management, open innovation, crowdsourcing, idea competitions, user engagement

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INTRODUCTION

In today's ever-changing environment the definition of innovation is transforming from being a key to a company's success towards a requirement for staying alive. Often even the most innovative companies can "do everything right" and yet fail. That is why many are obsessed with trying to find a way to overcome disruptions adequately. Today, organizations are redesigning the ways of managing their innovation processes. Opening up the innovation funnel for external parties and crowdsourcing ideas is a new way to include independent stakeholders into the company's R&D activities and therefore discussed broadly in the innovators' community. Idea competitions are one of the recent tools to foster idea management, open innovation, and crowdsourcing, and are of particular interest.

The term "crowdsourcing" first appeared in 2006, and online idea competitions platforms began to appear since then. There are many examples of successfully implemented challenges, however, the topic is still underinvestigated. Whenever individuals are involved in a certain activity, participants' engagement becomes the primary subject of investigation. The concept of engagement is a new perspective in analyzing relationships between stakeholders within the process of a project. Developing a better understanding of crowdsourcing experience and mechanisms of engagement may help practitioners to improve existing interactions and platforms used in crowdsourcing sessions (Aitamurto, Landemore and Saldivar Galli, 2016). De Vreede was the first to attempt to develop a model of user engagement in the open collaboration environment. However, the author suggested that in future researchers could discover and find additional drivers for engagement (de Vreede et al., 2013). After de Vreede's research was published in 2013, a group of scholars from University of St.Gallen conducted a single-case study research on a Swiss crowdsourcing platform using the designed model. Scholars recommended conducting multiple-case studies to identify more engagement driving mechanisms (Troll and Blohm, 2017).

Therefore, *research goal* of this study is to identify additional factors, to re-design and finalize the model of user engagement in idea competitions.

To address the above-mentioned research purposes, the following **research question** was raised:

Which factors influence participants' engagement in idea competitions?

To identify drivers of engagement in idea contests it is crucial to explore and describe the whole ecosystem of idea competitions, e.g. relationships between participants, roles of stakeholders and platform characteristics. Due to the innovativeness of the topic and the low level of investigation, this research is of *exploratory* nature. *Multiple-case study method* was identified as the most suitable for the stated research purposes, and four idea competition platforms were selected for the investigation: Lego Ideas, HyveCrowd, Innosite and Telegram InstantView Challenge. Both primary and secondary data was analyzed. Two rounds of interviews were conducted: first round to reveal additional factors, second round to confirm the validity of the model. Based on the findings, the model was updated and finalized.

This master thesis is structured in the following way. In the first chapter, the theoretical overview of idea management, open innovation and crowdsourcing is presented. Further, idea competition and engagement as its critical success factor is discussed. In the end of the chapter, the model developed by de Vreede is examined and the research gap is identified.

Next, the research methodology and data collection processes are explained. Subsequently, the fourth chapter illustrates empirical results of the study and demonstrates the finalized model of engagement in idea competitions. Finally, managerial implications are defined and limitations of the research are stated. Additionally, suggestions for future research are presented.

1. THEORETICAL OVERVIEW OF IDEA MANAGEMENT, OPEN INNOVATION, AND CROWDSOURCING

1.1 Idea Management

For decades, there was a growing awareness of the importance of innovation, and for many companies, especially those in high-tech and knowledge-intensive industries, it has been a top strategic priority. Thus, there has always been a great need for new concepts and tools that can assist and drive the innovation process. (Iversen et al., 2009) In 1990's organizations concentrated on implementing New Product Development (NPD) models, Integrated Product Development and Concurrent Engineering concept. Their goal was to improve integration between the departments and to optimize the whole innovation process. In parallel, efforts were directed to boost front-end of innovation (FEI), an early stage of product innovation, a complex space of various stakeholders with a similar aim: finding and developing innovative ideas into new product concepts (Vagn, Clausen and Gish, 2013).

Today, in the era of rapid digitalization every organization has the same access to information, knowledge, techniques, and tools. Under these equal conditions, the question "How to achieve a breakthrough?" becomes more and more important. Companies are eager to find new ways to strive in front-end of innovation, and one of the solutions given is *Idea Management* (IM) (Mikelsone and Liela, 2015).

Having identified a need for improvement and establishment of consistent idea flow within the company, it is important to recognize the complexity of high-value ideas distinction and their development into tangible profits. While this transition might be facilitated by respective techniques dedicated to the idea-creation process, the company should also take into account its own internal specifics. This is precisely a gap IM is filling in, a structured process of defining, generating and collecting, enhancing and improving, as well as evaluating and prioritizing ideas (Gallmeister and Lutz, 2016).

Green et al. (1983) were ones of the first researchers who recognized the companies' need for idea flow, introducing idea management aspects in their work. While many studies see IM as a part of innovation management (Miecznik, 2013), some of them are dedicated to the understanding of how IM can help organizations putting innovation into practice and underlining its mutually

supportive relations with front end innovation (Aagard, 2013; Bassiti and Ajhoun, 2013). Barczak et al. (2009) in their turn argue that, although the goal of IM's use might be unclear in the initial stage of innovation management, its presence clearly states a need for company's management change.

Rowbotham and Bohlin (1996) two decades ago suggested a structured approach towards IM, indicating its 7 parts: the development of criteria, preparation for idea generation, idea selection, development of ideas, idea evaluation, ranking of ideas and concept development. Bothos, Apostolou and Mentzas (2008) divided IM into three parts: idea generation, idea enhancement, idea evaluation. Klein and Convertino (2014) in their more recent work proposed another description of IM process, which, in their opinion, includes requesting ideas, collecting those relevant, selecting the most appropriate and, finally, evaluating them. These steps are necessary for creating innovative products and services or improving existing ones.

Initially, Green et al. (1983) refer to idea management while analyzing ideas' flow in R&D laboratories from a human information-processing perspective. Although not stating it distinctively, this paper made a solid connection to the future of idea management at the time, currently related to computer technology as an alternative to human brain capabilities. Another application of idea management is emphasized in Xie and Zhang (2010) work dedicated to the understanding of the process of team creation. Currently, the goal of IM is defined by Westerski et al. (2011) as seizing those ideas that would potentially bring benefits to companies by solving problems or generating innovations.

According to Sandstrom and Bjork, the nature of innovation itself has changed rapidly over the years. For instance, instead of implementing incremental innovation companies now focus on business model innovation or open innovation and these changes drive the demand for new idea management systems (Sandstrom and Bjork, 2010). In regard to IM, Westerski et al. (2011) dedicate their study to the analysis of idea management development over the years, emphasizing the path idea management has gone through – from a box for pieces of paper with employees' ideas to web 2.0 systems supported by heavy databases. The emergence of technologies such as web-based collaboration platforms and social networks has transformed the former physical idea suggestions tools into online IM systems. Such systems provide an opportunity for both internal

and external innovators to suggest ideas, rate ideas of others and discuss them online (Hrastinski et al. 2010).

Vandenbosch et al. (2006) highlight the difference between human idea management system and IT one, claiming that while the first one can exist and evolve by itself, the latter one needs specific tools and careful management to be maintained. In this regard, Couhglan and Johnson (2008) discuss how ideas are developed in companies and described several strategies and techniques aimed at efficiently handling them. Selart and Johansen (2011) take another perspective on idea management classification and identify value-focused and alternative thinking within this system, pointing out that the first one has a positive impact on the quality of ideas, although substantially lowers their amount overall. Shani and Divyapriya (2011) take a more holistic approach towards idea management analysis basing their research on a life-cycle of innovation. Bassiti and Ajhoun (2013) further develop this idea and conclude there are 4 constituents of the above-mentioned cycle, including idea generation, evaluation, implementation, and links. Dhodapkar (2012) suggests a similar approach towards IM structure, introducing front-end, back-end, reporting and ideas' capturing parts of the process. Front-end he defines as instruments of collecting ideas, which include brainstorming, email-based as well as web- and intranet-based infrastructures; back-end, in his opinion, is mainly concerned with identification and prioritization of high-value ideas; reporting deals with evaluation of effectiveness of idea management systems, for instance, amount of ideas submitted versus a task, number of individuals engages, etc.; finally, ideas' capturing is referred to as means towards encouraging boundless idea generation process, developing the brightest ones and generally making this activity appealing for any individuals involved.

Brem et al. (2007) were among the first ones of researchers who considered external parties as sources of ideas for companies, emphasizing the importance of an integrated idea management system. Later researches focus on the investigation of distinctively internal and external idea sources. While Zejnilovic et al. (2009) explore approaches to engaging companies' employees to submit their radical ideas to IM systems and ways of increasing the rate of their successful implementation, Bothos et al. (2012) highlight the importance of bringing external parties to idea creation process, and clearly show benefits of such a tool, namely reducing time and costs of this process by providing this opportunity outside the company. Enkel et al. (2009) develops above-

mentioned researchers and sees the Internet as a great opportunity for bringing internal and external idea sources together.

The importance of specific tools regulating idea management and providing its high levels of efficiency was recognized as a hot topic among academics in the beginning of the 21st century. Nilsson et al. (2002) more than a decade ago investigated this area and came up with recommendations towards increasing innovation capacity of companies via idea management system. Hrastinski et al. (2010) more recently devote their work to the analysis of existing technologies aimed at supporting idea management and conclude that IT systems may not be sufficient at initial stages of developing ideas. Having suggested one of the first classifications of idea management systems, namely "active" and "passive" ones, emphasize that the most efficient IM systems result from simultaneous use of real life and web-based idea creation processes.

1.2 Open Innovation

Even though the idea and some of the concepts of Open Innovation date back as far as the 1960s, the term itself was promoted in 2003 by Henry Chesbrough, a professor at Haas Business School, University of California. The term then referred to a paradigm that assumed that companies should seek help of external parties in parallel to internal innovation processes in their search for new ideas (Chesbrough, 2011). He saw Open Innovation as a knowledge-flow (inbound and outbound) with a goal to accelerate internal innovation. Recent scholars interpret the term in a slightly different way. For instance, they suggest that by opening up the innovation process, firms can make greater use of external knowledge and collaborate with a variety of external parties. (Mortara and Minshall, 2011) Joe Tidd claims that Open Innovation means that companies should "acquire valuable resources from external firms and share internal resources for new product development (Tidd, 2014).

It is clear that the interpretations of the term vary in a sense that some claim that it is a knowledge-flow, other choose to view it as resource acquisition. Additionally, one group of scholars puts an emphasis on collaboration between organizations or firms while another does not limit the concept of "external parties" to companies, but rather broadens it to users, partners, suppliers, etc. In general, under the open innovation, firms search for knowledge or resources more broadly and deeply, across different external parties (Garriga, von Krogh, & Spaet, 2013).

In order to understand fully the definition of Open Innovation, it is crucial to compare it to the opposite, Closed Innovation concept. Visual comparison of these two models is represented on Figure 1. Closed Innovation assumes that the whole innovation process should be kept and controlled only internally, e.g. by hiring the smartest employees, keeping new products in a secret, etc. Thus, in companies that have closed innovation processes, all stages of new product development never leave the companies' boundaries (Chesbrough, 2006).
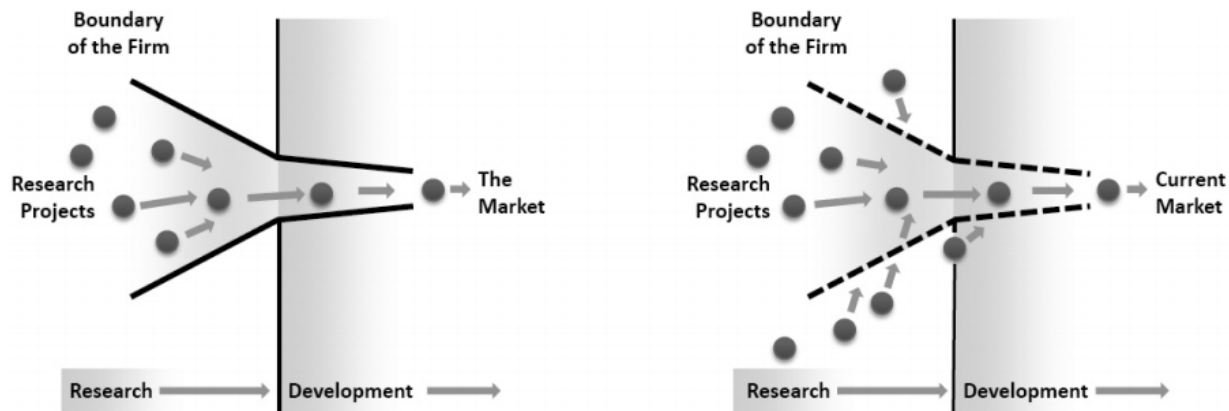
Figure 1 Closed Innovation versus Open Innovation (adapted from Chesbrough, Vanhaverbeke and West, 2006)

Under the Open Innovation, on the contrary, external parties are included in the early stage of R&D process. Such integration of new stakeholders opens up the innovation funnel, and new innovative ideas or perspectives flow into the innovation process of the company. Terwiesch and Ulrich argue that profitable innovation does not come from increasing R&D investments, but from identifying a larger amount of opportunities (Terwiesch and Ulrich, 2009). In this sense, the innovation potential increases as more parties are involved in the process (Leimeister et al., 2009).

While initially studies devoted to open innovation were mainly concerned with high-tech industries, Chesbrough and Crowther (2006) later claimed that it could be applied to other industries, too. Chesbrough (2011) also argues that the use of open innovation will eventually lead to organizational business models' development aimed at opening up towards an external environment in order to create value more efficiently. Perkmann and Walsh (2007) take another perspective and investigate relationships between industries and universities from an open innovation perspective, resulting in a distinct framework focused on differences of university-industry and other business partnerships. Enkel et al. (2009) further point out that outbound open

innovation has undeservedly lacked attention of academics, and insist both inbound and outbound innovation processes should coexist simultaneously and compete with each other.

According to West et al. (2014), who have recently summarized academic findings regarding open innovation, this approach has been highly beneficial for the companies using it in the past years. Paul Sloane (2011) respectively gives examples of P&G, aimed at bringing 50% of innovations through open innovation, and Kimberly-Clark that has escalated the process of launching new products by 30% via the same approach. In his book "A guide to open innovation and crowdsourcing" (Sloane, 2011), he also defines four types of open innovation:

1. Suggestive/participative – encouraging people to submit their ideas and further choosing the best out of those;
2. Suggestive/invitational – engaging specific individuals, teams or companies in creating ideas regarding broad topics;
3. Directed/invitational – engaging specific individuals, teams or companies in tackling particular business challenges;
4. Directed/participative – encouraging people to submit their suggestions and proposals regarding particular business challenges.

He further explains that in order to choose the most appropriate of one of the above-mentioned approaches it is crucial for the company to firstly have a clear view of its internal strategy and understand what it wants to achieve with open innovation.

1.3 Crowdsourcing

Being a relatively recent concept, "crowdsourcing" emerged from the words "crowd" and "outsourcing". It has been introduced as a specific model in which organizations use the crowd to obtain new knowledge or conduct services traditionally performed by a designated agent (usually an employee) (Howe, 2006). Crowdsourcing can be used in different stages of organization's innovation process, e.g. ideas generation, product development, product design, marketing, etc. (Šundić and Leitner, 2013). In 2012 researchers from the Technical University of Valencia put an effort to summarize more than 200 definitions of the term "crowdsourcing". They achieved the following explanation: "…a type of participative online activity in which an individual, an

institution, a non-profit organization, or a company proposes to a group of individuals of varying knowledge, heterogeneity, and number, via a flexible open call, the voluntary undertaking of a task" (Estellés-Arolas and González-Ladrón-de-Guevara, 2012).

Howe (2006) identifies three main constituents of crowdsourcing process:

1. Users are not only consumers, but producers – for instance, consumers go to the website of the company not only to gain more information about the products or services or purchase them but to actually contribute to production process;
2. Number of users is undefined – amount of people involved in crowdsourcing is not fixed initially and emerges during the process;
3. Efforts of users are directed towards particular task – a so-called "open call" is a necessary starting point of any crowdsourcing process, stating a specific request from the company to potential users.

The opportunity creation process within the crowdsourcing session is illustrated in Figure 2.
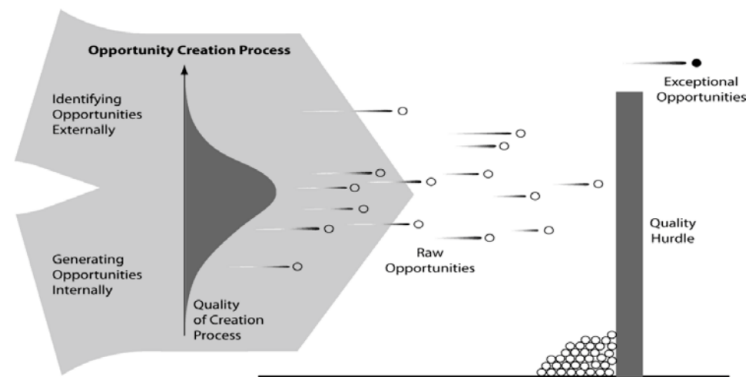
Figure 2 Opportunity creation process (adapted from Terwiesch and Ulrich 2009)

Crowdsourcing creates a flow of "raw opportunities" of ideas that need to pass the quality hurdle set by the organization. Exceptional opportunities are rare, and therefore a significant number of ideas need to be generated by the crowd before the extraordinary one emerges (Terwiesch and Ulrich 2009). The larger the number of participants in crowdsourcing sessions, the more diverse views will emerge. More diversity increases chances to obtain innovative ideas (Saldivar et al. 2016).

Blohm et al. (2013) indicate two types of crowdsourcing:

1. Competitive – collecting and transmitting independent solutions;
2. Collaborative – developing a common solution in a collective way.

Howe (2008) suggests another classification:

- Crowd wisdom – creating a network of people possessing particular knowledge and providing them with respective opportunities to share it;
- Crowd creation – creating opportunities for individuals to create their own content, such as photos, videos, papers, etc.;
- Crowd voting – engaging people to share their judgement regarding particular topics or issues;
- Crowd funding – using personal fund of individuals instead of those possessed by banks and other financial institutions.

The popularity of crowdsourcing can be explained by its benefits. First, crowdsourcing is a relatively inexpensive and easy way to obtain ideas (compared to internal idea generation process). Second, the level of subjectivity can be reduced significantly as "the crowd" represents the diversity of knowledge, experience, and opinions compared to internal teams. Participants can think out of the box and generate distant ideas. Finally, the perception of crowdsourcing, companies think of it as a way to identify trends, gain an understanding of the market or confirm its business intentions (de Vreede et al. 2013).

Also, the idea of mutual benefit shared between crowdsources and crowdsourcees appears to be appealing. Besides tackling an unsolvable inbound issue via external resources, companies may enrich their brand visibility (Ye and Kankanhalli, 2015). Participants, on the other hand, may be motivated by remuneration as well as self-development and recognition among respective individuals and/or companies. While some researchers try to evaluate user engagement from an experience-based perspective (Pedersen et al., 2013), it seems that their papers lack holistic approach towards assessing participants' engagement within whole crowdsourcing process.

Although crowdsourcing is recognized among academics as a part of well-studied open innovation approach (Wikhamn and Wikhamn, 2013), the number of papers devoted to the discussion of the phenomenon of crowdsourcing is still surprisingly low (Hossain and Kauranen, 2015). While above-mentioned Estellés-Arolas and González-Ladrón-de-Guevara (2012) succeed

in defining it and Zhao and Zhu (2012) make a review of existing literature, many issues concerned with crowdsourcing, such as applications, benefits, risks, etc., are yet to be explored by researchers.

Marjanovic et al. (2012) make an attempt to point out potential risks of crowdsourcing, claiming that in order to use this approach companies often need to expose their particular weakness or disclose a vector for further development, which could be used not in their favor by competitors. Franklin et al. (2011) underline another limitation of crowdsourcing, stating that external individuals engaged have different levels of expertise and motivation, which could lead to unsatisfying results of such a practice.

2. IDEA COMPETITION AND ITS CRITICAL SUCCESS FACTOR

2.1 Idea competitions

Idea competitions is one of the promising tools for leveraging open innovation and crowdsourcing (Leimeister et al., 2009). Idea contests are usually conducted through internet-based platforms or websites where companies collect, evaluate and reward innovative ideas or problem solutions submitted by customers or the general public. Therefore, it is also a tool that fosters idea management.

An open idea competition works as the following: an organizer (traditionally called a seeker) sets a topic or a question, defines the time-frame, and invites "the crowd" to participate in the ideation process. When participants (called solvers) submit their ideas, other participants have a chance to discuss them. Subsequently, a pre-defined committee evaluates submitted ideas and rewards a winner or a number of winners (Ebner et al., 2008). One of the first major works focused exclusively on idea competitions was written by Christian Terwiesch and Karl Ulrich in 2009. In their book, they argue that "innovation tournaments" or idea competitions embody the Darwinian principle of survival of the fittest. They compare idea competition with the show "American Idol": many participants compete, but only "the fittest" survives (Terwiesch and Ulrich 2009).

One of the well-recognized idea competition heritage is provided by MIT, and their founders quite distinctively describe the motivation behind the organization of such challenges. It is fair to say that proposed classification could be easily applied to general idea competitions and their participants. 5 primary goals of idea competitions as described by respective MIT representatives are the following:

- To promote participants' inventiveness and entrepreneurship;
- To expose participants to real-world problem solving;
- To provide resources to implement plans and products that meet community/company needs;
- To increase awareness of community/company needs;
- To empower individuals with the knowledge that they can make a difference in the world (Smith et al., 2003).

Idea competitions have proved to be an effective instrument of idea generation process engaging both inbound and outbound specialist (Gassman and Enkel, 2006). As a consequence of that, at some point companies have actually faced an urge for attracting individuals to their particular challenges, and a competition for participants has emerged (Fuller, 2009). Thus, it became clear for organizers of idea competitions that in order to obtain a necessary number of ideas submitted and provide the required quality of those, they should be able to successfully attract individuals to taking part in challenges and maintain their high level of engagement with the process during the whole time the competition takes place.

Following this logic, investigation of motives leading individuals to participate in idea competitions has become a hot topic among academics about a decade ago. Primarily, basic remuneration and firm recognition were taken into consideration by researchers as drivers of participants' engagement (Morgan and Wang, 2010; Leimeister et al., 2009). Nevertheless, it was soon realized that these drivers may actually have a negative impact on individuals' willingness to give an idea competition a try and, most importantly, to rejoin the challenge later on (Fuller, 2006). Fuller (2006) further develops this idea, basing his research on the self-determination theory of Deci and Ryan (2000), who identify extrinsic and intrinsic incentives of individuals. Referring to above-mentioned financial and organizational rewards as extrinsic means of engagement, Fuller (2006) claims that they are not sufficient for providing a required level of participants' engagement. Quite on the contrary, organizers of idea competitions, in his opinion, should take a closer look at intrinsic incentives, which, in case of being tackled appropriately, according to Bretschneider et al. (2012) study, result in increased amount of ideas submitted, their quality and willingness of individuals taking part to rejoin new challenges of companies. Morgan and Wang (2010) summarize above-mentioned academic proposals and define 4 crucial elements of idea competitions' design that their organizers should consider, namely the interdependency of participants' performance, the innovative nature of the problem, the heterogeneity of participants' abilities, and the importance of secrecy.

Authors provide many historical examples of offline idea competitions. In the 18th century, British government initiated the competition for breakthroughs in the measurement of time and navigation principles. In the 19th century, the grand prize of 100,000 franks was offered by the French Academy to those contestants who would discover a way to produce soda from sea water. Charles Lindbergh won the Orteig Prize of 25,000 by crossing the Atlantic for the first time in

1927. In 2004 Mojave Aerospace Ventures received 10 million USD from X-Prize Foundation for the suborbital spaceflight by their SpaceShipOne (Terwiesch and Ulrich 2009).

One of the first documented successful examples of open online idea competitions is Netflix Prize initiated in 2006. Netflix Prize was an open competition for the best collaborative algorithm that could predict users' ranking for films based on their past rankings (with no other information given, e.g. without identification of users or exact films). In 2009 the grand prize of 1 million USD was awarded to the team that could improve the Netflix' internal algorithm Cinematch by more than 10% ("Netflix Prize", 2017).

2.2 Participants' engagement as a critical success factor for idea competition

Whenever individuals are involved in a certain activity, participants' engagement becomes the primary subject of investigation. Idea competitions can be successful only if participants are highly engaged in the process (de Vreede et al. 2013).

De Vreede has developed a model of user engagement in idea competitions as shown in Figure 3. According to his study, there are three factors that drive user engagement: *Personal Interest in Topic*, *Motivation to Contribute* and *Goal Clarity*.
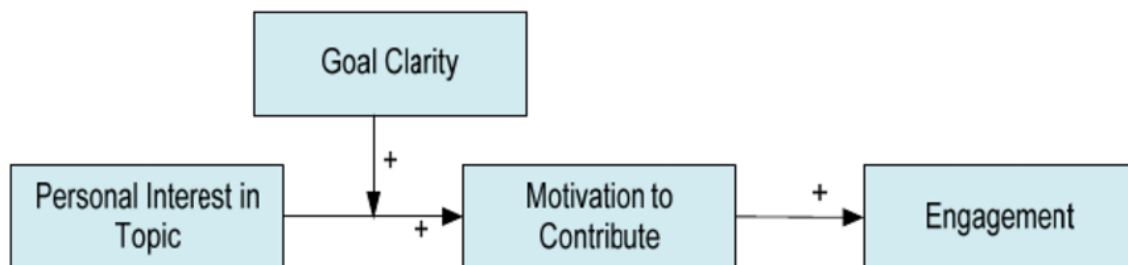
Figure 3 Model of user engagement in open collaboration crowdsourcing (adapted from de Vreede et al., 2013)

Personal Interest in Topic

According to de Vreede, the first important factor that drives the engagement of participants in idea competitions is personal interest. If users are not interested in the topic of the competition, there is a small chance that they will achieve significant results. Scholars divide personal interest

into two categories: topical interest (or topic-based interest) and situational interest (Flowerday, Schraw and Stevens 2004). Topic-based interest stable as it is developed for a longer period of time through personal experience and emotions. For instance, it can be an interest in the particular industry, technology or a company associated with the person's day-to-day activity. Situational interest is rather short-term: it depends on a context and is environmentally activated and might disappear as quickly as it occurs. Situational interest is a useful tool to "catch" users' attention while topic-based interest can assist in holding the attention over time (de Vreede et al. 2013).

Motivation to Contribute

Another factor that contributes to user engagement is motivation to contribute. Leimeister was one of the first researchers to investigate participants' motivation behind participation in idea competitions. Leimeister analyzed solvers' motivation behind participation and identified four categories: direct compensation, learning, self-marketing and social motives (Leimeister et al., 2009). While conducting his study on a crowdsourcing platform Threadless in 2010, Brabham has conducted 17 interviews with solvers and came to similar conclusions. According to his studies, participants' motives were: the opportunity to make money, the opportunity to develop creative skills, the potential to find additional work and job opportunities, and the positive attitudes toward the community involved (Brabham, 2010). In 2011 a group of scholars analyzed data from 283 contest solvers from Chinese crowdsourcing platforms and found out that motivation to gain monetary rewards and motivation to gain recognition had different effects on participation intention, moreover, intrinsic motivation was more critical in inducing the motivation (Zheng, Li and Hou, 2011).

Goal Clarity

Goal clarity is the third factor described by de Vreede as a driver of user engagement. Goal clarity is an ability to set precise, well-defined and specific targets that all stakeholders understand and can work towards achieving (Sawyer 1992). Studies conducted by Bipp and Kleingeld show that goal clarity increases participants' commitment towards the goal. Communities and teams are also more successful if goals are well-defined from the beginning of the process or a project (Bipp and Kleingeld 2011). In the context of open crowdsourcing collaboration or idea competitions, in particular, goal clarity means the extent to which companies make it clear what participants are

expected to do and what they can gain as a reward. In their studies, Zheng, Li and Hou prove that well-defined tasks increase intrinsic motivation of participants (Zheng, Li and Hou, 2011). However, de Vreede argues that goal clarity alone is not a sufficient factor that enables user engagement in idea competitions, it can rather be an addition to personal interest and motivation to contribute (de Vreede et al. 2013).

2.3 Research Gap

Idea competition is a relatively new tool used by firms that are keen to open their innovation funnels to engage external bright minds in their R&D processes. There are many examples of successfully implemented ideas competitions, however, the topic is still underinvestigated.

While discussing her findings, de Vreede states that even though her user engagement model is one of the first to be developed, it is not "complete". She suggests that in future researchers can discover, add and describe additional factors that influence user engagement in idea competitions, and the model can be re-designed and expanded (de Vreede et al. 2013).

The concept of engagement itself is a new perspective in analyzing relationships between the stakeholders within the process or a project. Developing a better understanding of crowdsourcing experience and the associated mechanisms of engagement may help practitioners to improve existing interactions and platforms used in crowdsourcing sessions (Aitamurto, Landemore and Saldivar Galli 2016).

In 2017 Julia Troll and Ivo Blohm from University of St. Gallen conducted a single-case study on a crowdsourcing project initiated by a leading insurance company from Switzerland. Even though the research is a pilot study that provides valuable insights, they recommend conducting multiple case studies to identify more engagement-driving mechanisms (Troll and Blohm, 2017).

3. RESEARCH DESIGN

3.1 Research Question

A literature review has revealed a research gap between existing studies and needs of practitioners. The goal of the thesis is to update de Vreede's model of participants' engagement in idea competitions. There is a limited number of case studies on idea competitions focusing specifically on participants' engagement, and therefore, the exploratory nature of this study has been justified.

In order to identify additional factors that drive participants' engagement in idea competitions the following research question was stated:

Which factors influence user engagement in idea competitions?

To identify factors driving engagement in idea competitions it is crucial to explore and describe the whole ecosystem of idea competitions, e.g. relationships between participants, roles of stakeholders, platform characteristics, etc. Thus, the following subquestions need to be addressed in order to answer the proposed research question:

- *How are idea competition platforms designed?*
- *How are activities (e.g. discussions, idea submission, idea evaluation) organized?*
- *What are the roles of stakeholders involved in idea competitions?*
- *Why do solvers decide to participate in idea competitions?*
- *What do solvers gain from participating in idea competitions?*
- *What is the ecosystem of idea competitions?*

The research will be based on a collection of both primary and secondary qualitative data. The more detailed description of research methodology is introduced later in this chapter.

3.2 Research Methodology

Exploratory nature of the proposed research implies that the most appropriate method would be *multiple-case study research*.

There is no easy explanation of what case study is, and therefore this particular research method is difficult to describe. Several definitions of case studies have been introduced over the years. Robert K. Yin is the most cited scholar in terms of case study research method definitions. According to Yin, the case study needs to be described from two perspectives: scope of case study and features of case study. From the scope perspective, "…a case study is an empirical enquiry that investigates a contemporary phenomenon in depth and within its real-world context, especially when the boundaries between phenomenon and context may not be clearly evident". From the features perspective, "…a case study enquiry copes with the technically distinctive situation in which there will be many more variables of interest than data points and as one result relies on multiple sources of evidence, with data needing to converge in a triangulating fashion, and as another result benefits from the prior development of theoretical propositions to guide data collection and analysis" (Yin 2012).

Case study approach allows gathering deeper information on relationships, opinions, beliefs and human behaviors. Compared to survey approach, it allows a higher degree of adaptability for the interviewer: the researcher can direct the respondent's attention on the matter that is important for the study (Miles and Huberman 1984). One of the more recent definitions of the case study as a research method is provided by Creswell: "The case study method "explores a real-life, contemporary bounded system (a case) or multiple bounded systems (cases) over time, through detailed, in-depth data collection involving multiple sources of information…" (Creswell 2013).

To justify the suitability of the chosen research method, let us go back to Yin's description of case study research method. Yin states that there are three key requirements that should be met in order to justify the suitability of case studies research method.

First, research questions and subquestions of the study should be focused mainly on "how" and "why" which proves the explanatory nature of the research. For this kind of research, case studies approach is considered to be the most suitable.

Secondly, the study should investigate an innovative and contemporary event or a setting in-depth. Due to the innovativeness of the proposed research, other methods are unlikely to be reliable. Case-study evidence will highlight real-life events and demonstrate the execution of new specific features. It is also suggested that the case study method is highly applicable to those areas

or topics that are underinvestigated or if there are no publications available on the matter (Eisenhartd 1989).

Third, if the case studies method is used, qualitative data gathered cannot be manipulated: the researcher will observe the events or a setting, analyze relevant information and communicate with only those highly involved in the process.

The aim of this research is to update the model of engagement in idea competition proposed by de Vreede. The topic is innovative from several angles. The field of crowdsourcing and open collaboration is still considered to be underinvestigated. Idea competition is a relatively new tool that draws attention of companies that are eager to open up their innovation funnel and seek for new techniques to obtain innovative ideas. Moreover, the concept of engagement itself is a new perspective in analyzing relationships between the stakeholders within the process or a project. Even though the main research question starts with "what", subquestions beginning with "how" and "why" are needed to be answered to describe the phenomena in detail. In this study, only relevant cases of idea competitions will be observed and only those highly engaged in the respective contests will be interviewed.

This research uses the inductive approach meaning that it begins with collecting data and observation on each case and further the generalization of theories will follow. The inductive approach is used in qualitative studies as it suggests development of theory based on analysis of a real-life case. On the contrary, deductive approach means creating hypotheses and confirming them with quantitative data. As we need to develop a new theory regarding factors influencing engagement in idea competitions, the inductive approach has been chosen as a suitable one.

The study will follow a multiple-case study design. There are several points of view on whether single case study or multiple case studies should be used. One of the benefits of multiple case studies approach is that scholar can analyze information within each situation and across various situations. The researcher can understand differences and similarities across cases and therefore assess the setting from various perspectives. Another advantage of multiple case studies over single case studies is that the evidence generated is considered to be more robust and therefore more reliable. When the suggestions made by the writer are proved with different empirical evidence, the research results in a more convincing theory (Yin 2012).

Information gathered on several idea competitions will provide an evidence on a bigger range of factors that influence engagement. By conducting a multiple case study research, we will decrease the subjectivity factor that might appear in a single case study due to specifics of industry, type or a size of the contest. Julia Troll and Ivo Blohm who conducted a single case study on engagement patterns in open collaboration setting of Swiss insurance company also recommend conducting a multiple case studies research to gather additional data on engagement-driving mechanisms (Troll and Blohm 2017).

3.3 Data collection process

Case selection for the purposes of current research is based on purposive criteria. (Emmel 2013) Yin suggests that for multiple-case studies each case must follow the replication logic and not the sampling logic. This means that each case must be carefully selected so that it either a) predicts similar results (e.g. replication) or b) predicts contrasting results but for an anticipatable reason (Yin 2012).

Idea competition platforms pre-selected for interviews and research are all ongoing, they all have their online presence and all are successful (there is an evidence that ideas were generated and the participants were rewarded). Thus, the results are expected to be similar. Even if differences are revealed, they are expected to be explained by industry specifics or other factors that will be discovered during the interview phase. In order to reduce a subjectivity factor that might appear due to specifics of a certain industry, the pre-selected idea competitions deal with different industries: toy industry, IT industry, construction industry and multiple industries. Additionally, chosen idea competitions differ in terms of size and platform design.

Four idea competition platforms are suggested for the stated research purposes: LEGO Ideas, Innosite, HYVE Crowd and Telegram Challenge. The study will be based on both secondary and primary data. Secondary data on each case will be collected from various sources: contest pages, community platforms, blogs, published interviews articles and studies. Short description of each of the investigated ideas contests platforms is stated below.

LEGO Ideas – toy industry

LEGO Ideas is a crowdsourcing platform where individuals or teams can create models with LEGO bricks, take photos, and write project descriptions. If the submitted model gets more than 10,000 supporters, it qualifies the project for review. LEGO review board then chooses which project becomes a new LEGO set. Peter Espersen, head of community co-creation at Lego, states that annually the company receives more than 20 thousand model ideas from participants. (Davidi, 2014). The winner of the contest is featured in brick sets materials, obtains a royalty on the set's sales (1%), and is recognized as the product creator. The last project that came into life was NASA Apollo Saturn V created by two enthusiasts, and it is available in stores from June 2017 (Ideas.lego.com, 2017).

Innosite – construction industry

Innosite is an open innovation platform created by Danish Energy Agency and Realdania and operated by Danish Architecture Centre. The platform allows seekers from Danish construction industry to set up a contest and invite users and experts in the development field to submit their ideas. So far, 25 contests were initiated by various seekers: developers, ministries, city councils, etc. Each contest has its own prize, it can be either monetary rewards ranging from 15,000 DKK to 50,000 DKK (USD 2000 – 8000 approx.) or non-monetary rewards, for example, bicycles (Innosite.dk, 2017).

HYVE Crowd Contest platform – multiple industries

The goal of this crowdsourcing platform is to "bring creative minds, makers, doers, and experts together on one table, to ensure the best innovative solutions and ideas for the tasks of the clients". In this way, companies can get access to external experts that can take part on projects all along the entire value chain. Contests published on Hyve Crowd platform are dealing with such subjects as design, innovation, and co-creation. By September 2017, 133 contests were initiated, 97663 participants were engaged and $1.1 million was awarded to the winners in total (Hyvecrowd.net, 2017).

Telegram Challenge – IT industry

Telegram is a free, non-profit instant messenger, created by Pavel Durov (former founder of Vkontakte) in 2013. Over the past four years, Telegram has organized numerous contests associated with the messenger's design, security and chat bots. In this research, we will focus on

Telegram's latest crowdsourcing contest "Instant Views Contest" initiated in May 2017 (Telegram, 2017).

Using secondary data available we will be able to identify how each of the platforms is designed in terms of engagement, e.g. what activities are involved, what kinds of relationships exist, how participants are classified and how communities are structured. Additionally, general information will be gathered and we will be able to discover how competitions are managed from the seekers' perspective and what incentive systems are used by organizers.

Primary data will be collected in two stages through interviews with participants involved in the idea competitions. At the first stage, we will reveal additional factors influencing engagement in idea competitions by analyzing "buzzwords" from interviews. These "buzzwords" will be categorized in groups, and factors will be discovered. After the model of engagement will be updated, the second round of interviews will take place to confirm the validity of the model.

The interview guideline uses open questions with an aim to gather relevant information need for the research. The interviewees will be found in communities of above-mentioned idea competitions. All respondents should be highly involved in respective idea competitions, and this can be defined by a number of ideas submitted, comments, time on a platform, participation in discussions, evaluations and other characteristics.

4. EMPIRICAL RESEARCH

4.1 Results of the study

4.1.1 Analysis of idea competitions platforms

The information on each of the analyzed idea competition platforms is presented below.

LEGO Ideas

General Information

LEGO Ideas is an idea competition platform run by Chaordix and Lego Group that allows users submit their ideas for Lego products that can be potentially manufactured and sold by Lego. The project was initiated in 2008 as a spin-off to a Japanese website Cuusoo.

Process

Users submit their ideas by writing a description and attaching an image of a model that demonstrates the concept. As soon as the idea is submitted, it appears on Lego Ideas website and becomes available for Lego Ideas community. The aim of each project submitted is to gather 10,000 votes which clear the model for review by Lego board. Lego review board consists of designers and marketing specialists that assess each idea according to the internal criteria. Participants have 2 years to reach the required number of votes, and in case the condition is not fulfilled, the project is withdrawn. All eligible projects are reviewed in order of reaching the 10,000 votes within the deadlines in May, September, and January.

Initially, there was no restriction in terms of ideas that can be potentially submitted. However, Lego changed that rule stating that the replicas of real-life weapons, projects based on third-party licenses are not allowed. Some of the projects may be rejected due to specific intellectual property issues.

If the reviewed product is cleared for production by Lego board, it is developed by Lego R&D team and subsequently produced with a "Lego Ideas" label. Those who designed the produced sets receive 10 copies of the model created and 1% royalty on the set's net sales. Currently, 18 Lego Ideas models have been produced, and 21 more are announced.

Platform design

Lego Ideas platform consists of 5 segments: "Discover", "How it works", "Submit", "Community" and "Blog".

On "Discover" page all of the submitted projects are listed (1845 in total on September 2, 2017). Each project has a name, an image, the name of the user submitted the idea, the number of votes collected and the deadline for gathering supporters. All ideas can be filtered by categories, tags, time or staff picks. They can be also sorted by a number of comments, votes, and followers. If you click on a project, the detailed description with all the attached images appears. Users can "follow" the project and track the updates of the chosen idea.

"How it works" page explains the mechanisms of Lego Ideas with a video and written description. Additionally, all the guidelines, rules and rewards can be found in this section.

Via "Submit" section users can propose their models. Video instructions can be found on this page including tips on how to take a photo of a set. There are also written instructions, for instance, "…keep it short, simple, and attention-grabbing" or "…photos must be well-lit with your model against a neutral (or non-distracting) background". For the images part, all kinds of pictures such as 3D renderings or hand drawings are allowed.

On the "Community" page all of the Lego Ideas participants are listed (more than 830,000 on September 2, 2017) with nicknames and short introductions. Detailed profiles are available with contact information (Twitter, Facebook, Linkedin), description of all the projects submitted by a user, followers, etc. Additionally, the number of submitted ideas, comments, and votes given by a user is indicated.

"Blog" is the section moderated by internal Lego Ideas team. Posts include interviews with those users who have reached 10,000 votes, information about conferences and competition updates.

Activities

Users are involved in the following activities: submitting ideas, supporting projects by voting, discussing projects (suggesting improvements or expressing their opinions), and following particular projects or creators of projects.

HyveCrowd Contest Platform

General Information

HyveCrowd Contest Platform was created by HYVE Innovation Community GmbH, the company that is located in Munich, Germany. HYVE focuses on innovation consulting, conceptual design, managing innovation and co-creation. The aim of HyveCrowd Contest Platform is to provide an opportunity for creative minds to develop innovative ideas. This community should become a focal point of exchanging innovative ideas. According to HyveCrowd, 97,663 participants were involved in the ideation process and 1,5 million USD was awarded in prizes. (Hyvecrowd.net 2017)

Process

HYVE launches its own challenges mostly in the sphere of innovations, for instance, "Robotic Challenge 4.0", "UV LED idea challenge" or "From Space to Earth - Carbon Composites Contest". External contests are also listed on HyveCrowd platform including "Frankfurt Airport Challenge" initiated by Fraport AG, "Rethinking Kids' Medication" by pharmaceutical company AbbVie, "Audi sound plus" by Audi, and many others in various fields. In total 133 contests (internal and external) were initiated and 121,861 ideas were submitted. (Hyvecrowd.net 2017) Timeline of competitions is defined by contest's organizers, and idea reviews are also done by initiators.

Prizes provided for winners vary depending on a contest: monetary awards (range of EUR 1,500 – 10,000), a percentage of net sales or even laptops, participation in conferences, etc.

Platform design

There are 5 sections on HyveCrowd platform: "Home", "Contests", "Community", "Blog" and "About Us".

"Home" part shows overall statistics of the platforms: number of campaigns, submissions, participants, prize money and visitors. Additionally, an overview of continuing and past contests is provided.

"Contests" page presents all of the contests, and the user can choose from ongoing and current competitions. Previews of contests are listed with names of contests, end dates and prizes. If you click a button "visit the contest page" a more detailed description is shown alongside with the

timeline of the contest. Here all the submitted ideas can be viewed, evaluated and discussed. Registered users have an opportunity to submit their ideas.

"Community" section is divided in two: members and wall of fame. Besides solvers' profiles, HyveCrowd team members' pages can be found as well. Each profile includes a number of messages, comments and idea submissions. Contact information is also presented if a person wishes to include such: location, Facebook, e-mail, personal website, etc.

"Blog" is devoted to updates on competitions, either launching, ending or finished. Additionally, information regarding upcoming workshops or HYVE projects results and other news are presented.

"About us" is an introduction page that includes the idea behind the contests platform, information about HYVE as a company and an invitation to register.

Activities

Users of HyveCrowd platform are engaged submission of ideas, discussions of others' ideas and evaluations. The platform also provides an opportunity of sending messages to other members of community internally.

Innosite

General information

Innosite is an open innovation platform that connects players with a need for innovation with people who have creative ideas. The website is an initiative of Danish Energy Agency in collaboration with Realdania. Currently, it is administrated by Danish Architecture Centre. The goal of Innosite is to explore and further advance a dynamic innovation environment within the construction industry in Denmark and to encourage dialogue across professionals, organizations and creative minds. The platform is opened also to those outside of construction industry allowing companies to introduce tenders and contests, share ideas and inspire others with new innovational techniques. (Innosite.dk, 2017)

Process

Innosite acts as an integrator of contests mostly in construction, urban development, and clean tech industries. Various organizations including developers, ministries and city councils initiate their contests on the above-mentioned topics, for example, "Culture Park – Creation of tomorrow's city park in Hedehusene" by Hedehusene Town Centre, "Solar dreams" launched by solar panel producer Bolius or "Accessible Everyday" – a competition for designing level-free entrances, introduced by Danish Architects' Association, etc.

Most of the seekers provide monetary prizes in a range of 15,000 DKK - 50,000 DKK (USD 2000 – 8000 approx.), however some organizers reward winner with bicycles or opportunities to present their idea on exhibitions, conferences, etc. Juries are representatives of contest initiators and are clearly stated by names on the contest page. Criteria differ from competition to competition and are also shown on the page.

Platform Design

Innosite has 6 sections: "Home", "Contests", "All Ideas", "Community", "Info" and "Events".

"Home" page gives users an idea what contest is about mentioning newest competitions and recent idea submissions. Latest discussions are also listed within the section.

"Contests" section includes snippets of contests in order of updates. For those competitions that are already finished, winners appear on snippets. Detailed information on a challenge appears if users click on each snippet.

"All Ideas" section list all the submissions by solvers, and can be filtered by date of submission, number of comments, vies or rankings.

"Community" page has a list of profiles. Not only solvers are presented on this page, Innosite team members are also included in the community together with "experts" who are representatives of seekers. Team members and experts have the respective labels on their profile pictures. Users have an opportunity to write a short description about themselves and add contact information. Users' activities such as comments and ideas are shown in this section.

"Info" includes the description of the Innosite platform and provides information about how contests are structured and what is the idea behind this competition platform.

Innosite organizes events in Denmark, and the information regarding such affairs is presented on the "Events" page. Events vary from award ceremonies and exhibitions to conferences and meetings.

Activities

Users of Innosite can participate in the range of activities such as idea submission, discussions and offline meetings. They do not have a possibility to evaluate others' ideas.

Telegram InstantView Challenge

General Information

Telegram InstantView Challenge was organized by Telegram, a non-profit cloud-based messaging service. The competition was initiated in summer 2017, just recently the winners were announced and awards were granted to winners (as of September 4, 2017). InstantView Challenge is an open crowdsourcing competition where users can create templates and check them for bugs (technical issues). Templates are instructions that allow Telegram servers process articles from all over the internet and convert them into light-weight versions to be displayed to messengers' clients. ("Contest - Instant View" 2017) Telegram has already announced their plans to start the second phase of InstantView Challenge in the upcoming months.

Process

The aim of the contest is creating a significant number of high-quality templates using the Telegram image editor before the challenge ends. The first participant to submit the valid and working template for a pre-selected website receives from 50 to 100 USD. This amount is multiplied by a number of winning templates submitted by solvers. A grand winner is a person who submits the highest number of valid templates (without significant technical issues). The grand winner receives 10,000 USD in addition to the amount awarded for individual templates submitted by a user. For the second place, 5000 USD is awarded.

Anyone can assess results of the contest (not the code). If the viewer reveals technical issues he or she can report them using a dedicated section. The author of the template can view the issues

discovered, fix them and re-submit the work. However, if another user submits the winning template in the meantime, this is considered a winning submission.

Telegram jury will evaluate all of the bugs in order of reporting. After the contest is ended, the same review board will also check all the winning templates manually to define if they are valid. After all the templates are reviewed, the winner is announced.

Platform Design

Telegram InstantView Challenge has 4 sections: "Intro", "Contest", "Rules" and "Checklist". Recently, "Contest Winners" page was added to the platform.

"Intro" has an overview of the competition and the description of Telegram templates editor with detailed instructions.

"Contest" page is the main section of the platform. The list of pre-selected domains is provided, and users can select them and submit their work.

"Rules" section explains the submission process, reveals rewards and provides an explanation of the templates review process. Additionally, criteria for valid templates are presented.

"Checklist" broadens the list of criteria for valid templates.

"Contest winners" page includes a list of winners with nicknames, number of submitted templates, number of issues and the amount of money awarded.

There is no dedicated section for community profiles or discussion. However, on the social network VKontakte, users created a dedicated thread in Telegram group to discuss all the troubles associated with the contests.

Activities

Solvers that participate in Telegram InstantView Challenge can either submit their templates using the dedicated editor or report the bugs found in submitted templates.

Overview of analyzed idea competitions platforms is presented in Figure 4.

Category / Idea competition		Lego Ideas	HyveCrowd Contests	Innosite	Telegram InstantView Challenge
Industry		toy industry	multiple industries	construction, clean tech, urban development industries	IT industry
Number of contests		1, continuous	133	25	1, finished, next phase announces
Number of registered users		830000	97663	approx. 300	approx. 620
Prizes	monetary	1% or model's net sales	1500 - 10000 EUR depending on a contest	2000 - 8000 EUR depending on a contest	no
	non-monetary	10 copies of the model	laptops, conferences participations etc. depending on a contest	bicycles, conferences participations etc. depending on a contest	50-100 USD for each template; 10000 USD grand prize; 5000 USD second place
Platform Design	Information on a contest	yes	yes	yes	yes
	overview of all ideas	yes	no	yes	yes
	idea submission	yes	yes	yes	yes
	rules explanation	yes	on each contest page	on each contest page	yes
	community	yes	yes	yes	no
	blog	yes	yes	no	no
Activities	idea submission	yes	yes	yes	yes
	idea evaluation	yes	yes	yes	only by reporting technical issues
	discussion	yes	yes	yes	only on social network Vkontakte
	messaging to other members	no	yes	no	no
	offline events	no	no	yes	no

Figure 4 Overview of analyzed idea competitions platforms (own elaboration)

4.1.2 First round of interviews

For the first round of interviews, 68 participants of all 4 analyzed idea competitions were contacted, 12 responded, and 8 interviews were conducted in the end.

František Hajdekr participated in the LEGO Ideas competition because he was a fan of LEGO and LEGO ideas was the only way to bring his idea into serial production. He wanted to present a model to other LEGO fans. However, after not receiving enough support from peers, the respondent decided not to submit any other ideas but to explore others' models. Mr. Hajdekr found some great designers and remains in a LEGO Ideas community as a "supporter" and "explorer".

Another interviewee who wished to be anonymous was also a big fan of LEGO brand, and she came across the platform (called CUUSOO at the time) accidentally. She was curious to see what would happen if she submits her idea on a platform and saw the whole process as "an exciting

experiment". The most important factor for her was to see how her own idea could potentially become an official LEGO set that people could buy in stores (two of her models were actually produced by LEGO, and she receives 1% royalty from its sales). Interestingly, even though the respondent is a winner of the competition, she does not see LEGO Ideas as an idea competition platform, but rather as a community of like-minded individuals. The biggest personal gain for the interviewee was a positive career impact and the impact her set made: she got invited to speak about her experience at many conferences around the globe.

Sumit Goski, participant of the HyveCrowd "From Space to Earth – Carbon Composites Contest" competition stated that he decided to participate because he needed money and even though he did not get the prize, he participated actively in discussions and gained more confidence in the end because he had positive reviews from both peers and experts.

Hiten Chudasama, participant of another HyveCrowd idea competition, "Advanced UV for Life", explained that he joined the contest because he liked to design products and the concept of design thinking. Additionally, the respondent found it reassuring that innovative ideas can take the form of a product. On a question regarding his primary motivation to participate the Mr. Chudasama mentioned three things: 1) he wanted to test his ability to create new products; 2) his curiosity, and 3) prizes provided by organizers. As for factors that contributed to his engagement, the respondent acknowledged the HyveCrowd platform's characteristics: easiness to use, smartness and simplicity. Additionally, he stated that his engagement pattern changed over time. When someone would put a better idea, he would initially lose motivation to participate, however, he could learn in the process, and generate new ideas which motivated him again.

Christiam Galluccio, who participated in Innosite's contest, stated that his motivation was purely financial, and as an experienced architect, he wanted to bring his idea to life. He won one of the contests and gained a lot of experience during the process.

Andrey Jelvakov chose to participate in Telegram InstantView Challenge for two reasons: 1) financial reward; 2) interest in the technological side of InstantView as it helps users to save time and money on the mobile Internet. Initially, organizers announced the prize of 100 USD for each "winning template" and 2 USD for bugs found in the "winning template". Mr. Jelvakov's motivation shifted overtime because organizers changed the conditions of the contest: participants could receive money only if the amount is bigger than 200 USD. Thus, all other participants could

not receive any amount of prize money. He complained that participants needed to wait for 2 months after the contest ended for the announcement of winners. Additionally, there was no support or information from organizers. It would be easier for the respondent if organizers could update the website and inform participants so they could remain active in the community.

Artem Kolnogorov joined the Telegram InstantView Challenge out of "pure curiosity" as an experienced Telegram User. The respondent is a developer, so he wanted to "play with the technology". He did not submit his template because he did not have enough time to work on it. However, he helped other participants by answering their technical questions and participating in the discussions.

Sergey Gnedin competed in Telegram InstantView Challenge because he was "bored". The respondent enjoyed both participating and observing others. He got so excited about the contest that he created a Telegram channel where participants could discuss all the events and troubles associated with the competition. At some point, all participants were divided into "teams", and those teams would compete with each other. The main reason for such inside competition lied in the design of Telegram Challenge itself. If someone could find a bug in the winning template, he or she received 2 USD from the winner's 100 USD. In the end, the winner could receive 0 USD if 50 USD were found by the team of other contestants.

Summary of the first round of interviews is illustrated in Figure 5.

Idea competition	Roles in the competition	Factors influencing user engagement			
		Personal Interest	Motivation to participate	Goal Clarity	Additional factors discovered
LEGO Ideas	Seeker Solver Explorer	curiosity; personal expertise; loyalty to the brand	financial reward; strive to design new products; transforming ideas into products	clear goal setting	- peer recognition - strong community feeling - positive career impact
HyveCrowd Contest	Seeker Solver Expert				- platform characteristics: smartness and simplicity - experts' feedback
Innosite	Seeker Solver				- new experience - new knowledge
Telegram InstantView Challenge	Seeker Solver Observer			organizers changed the conditions of the competition	- community - gamification - new knowledge - seekers' support

Figure 5 Summary of the first round of interviews (own elaboration)

4.1.3 Updating the model of user engagement in idea competitions

Based on the first round of interviews, additional roles and factors are added into the model. Some of the interviewees mentioned additional groups of participants different from traditional "solvers" and "seekers":

- "*Observer*": these participants either have an experience of submitting ideas or never submitted their own ideas, they only participate in the discussions, evaluation or support of others' ideas.
- "*Expert*": neither a "seeker" nor a "solver", these participants share their specific expertise and knowledge with solvers. They are experts in the topic of idea competition due to their work or life experience.

As discussed in the previous chapter, de Vreede confirmed three factors influencing engagement in idea competitions. All these factors can be put in a category of "*Pre-defined factors*": 1) Personal interest in a topic; 2) Motivation to contribute; 3) Goal clarity.

From the interviews, we identified "buzzwords" with which respondents described their experience within the respective idea competitions. Nine additional factors that influence engagement in idea competitions were discovered. Discovered factors are classified into 3 new categories.

Community factors:
1. Peer recognition
2. Strong community feelings
3. Experts' feedback
4. Seekers' support

Platform and Competition Design:
5. Platform characteristics: smartness and simplicity
6. Gamification

Gained factors:
7. Obtaining new knowledge
8. Obtaining new experience

9. Career Impact

Based on the findings from the first round of interviews, the user engagement model was updated as presented on Figure 6.
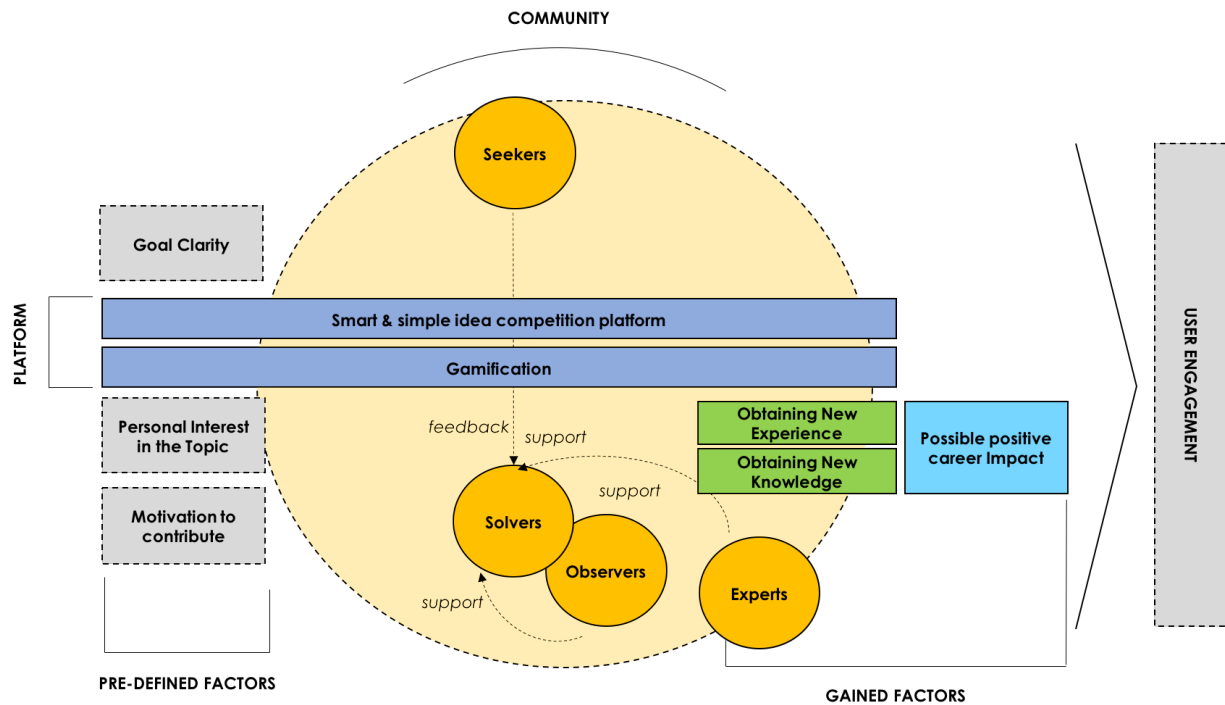

Figure 6 Updated model of user engagement in idea competitions (own elaboration)

4.1.4 Second round of interviews – confirmation of model validity

For the second round of interview 58 users of analyzed platforms were contacted, 21 responded, and 6 interviews were conducted to confirm the validity of the updated model. Interviewees represented all the identified roles: "seekers", "solvers", "observers" and "experts".

One of the community managers of Lego Ideas who wished to remain anonymous stated that all factors mentioned in the model are relevant and valid. Especially she emphasized the possible positive career outcome factor: Lego has an experience of employing those, whose ideas were valuable for the company. She mentioned another important characteristic of successful idea competition from the perspective of the seeker: transparency of all processes associated with the competition for all of the members of the community.

Grigory Liubachev, who participated as an observer within the Telegram InstantView Challenge agreed with the proposed factors, however he suggested the following improvements: 1) Incentive system provided by seekers should be derived from "Motivation to participate"; 2) Specific skill-sets needed for participation should be added to the model; 3) External factors such as the amount of free time that solvers, observers and experts have for participation have an additional impact on engagement. He provided an argument that sometimes he lacks specific IT knowledge or time for participation in such challenges even though he is highly motivated and interested.

Another solver that submitted a number of winning templates in Telegram InstantView Challenge also highlighted that monetary reward was the most significant factor for him and his peers especially after the competitions' conditions changed. Gamification factor that was developed unconsciously had an additional impact to his engagement. Finally, he added that if Telegram provided a distinctive community page and a dedicated space for discussions, probably all parties were more involved in the challenge.

Christian Terry who participated in HyveCrowd "Wearable Nature" contest confirmed that all the factors are relevant to his experience of engagement within the HyveCrowd platform. He was personally very interested in the topic, the platform was easy to use, and he enjoyed discussion with other participants of the contest.

Drawbacks of the Innosite platform were discussed during the interview with one of the experts. In her opinion, the amount of support and feedback provided by organizers was not enough. She added that if more experts and observers participated in contests, solvers could learn from their mistakes and submit better ideas in other challenges.

One of the solvers participated in "Accessible Everyday" challenge via Innosite platform. As an inexperienced designer and a student, he stated that the main benefit for him was the ability to learn from other rather experienced designers and architects. He did not expect to win from the very beginning, however he wanted to invest his free time into something meaningful. For him, the openness of the community was the most valuable factor as he wanted to receive feedback from professionals and acquire new skills.

Feedback received during the second round of interviews is summarized in Figure 7.

Categories	Factors	Validity
Pre-defined factors	Personal interest in a topic	confirmed by de Vreede
	Motivation to contribute	confirmed by de Vreede
	Goal Clarity	confirmed by de Vreede
	Free time	added
	Specific skill-sets	added
	Monetary and non-monetary reward	added
Community factors	Peer Recognition	confirmed
	Strong community feeling	confirmed
	Experts' feedback	confirmed
	Seekers' support	confirmed
Platfrom & Competition Design	Platform's characteristics: smartness and simplicity	confirmed
	Gamification	confirmed
	Transparency of processes	added
Gained factors	Obtaining new knowledge	confirmed
	Obtaining new experience	confirmed
	Career impact	confirmed

Figure 7 Confirmation of validity of factors influencing engagement in idea competitions (own elaboration)

Based on the results of the second round of interviews, the model of user engagement was redesigned and updated. Finalized model is presented on Figure 8.
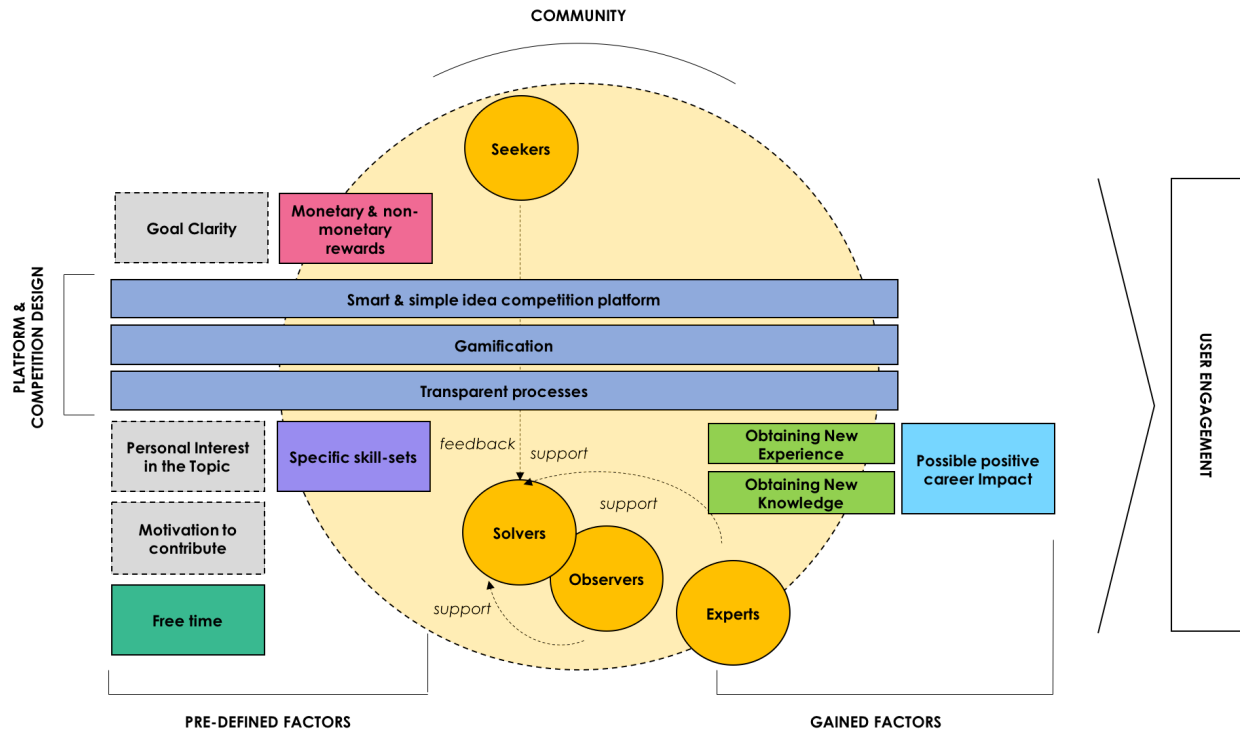
Figure 8 Finalized model of user engagement in idea competitions (own elaboration)

User engagement model was expanded and the following factors are added to the model.

In the *predefined factors* category (added to initial de Vreede's factors):

o   *Free time* – from the solvers' perspective

o   *Specific skill-sets* – from the solvers' perspective

o   *Monetary & Non-monetary rewards* – from the seekers' perspective

Gained factors category was introduced including three new factors:

o   *Obtaining New Knowledge*

o   *Obtaining New Experience*

o   *Possible positive career impact*

Platform &contest design category was suggested with three drivers of user engagement:

o   *Smart & simple idea competition platform*

o   *Gamification*

o   *Transparent processes*

The scope of community was re-designed and new roles and relationships were discussed. Besides traditional *seekers* and *solvers*, *observers* and *experts* were included and it was revealed that relationships between all of them have a significant impact on engagement in idea competitions.

4.2 Managerial Implications

The results of the research provide valuable insights for idea competition organizers (seekers). The model proposed by de Vreede consisted of three factors that influenced engagement in idea challenges. These factors were: "*Personal Interest in a Topic*", "*Motivation to Contribute*" and "*Goal Clarity*". The scholar stated that her model is not complete, and this was indeed proved during the interviews with participants of four different contest platforms.

The model was updated and redesigned. Nine additional factors driving engagement in idea competitions were revealed and classified. The scope of the contest community was broadened by introducing two new groups of participants: *observers* and *experts*. Relationships between all of the parties involved in the contest were of particular interest, and the community circle was included in the final model.

The new complete model is now a useful tool for designing idea competitions. Those companies that have already established contest platforms can improve them using the tool, and those organizations that are planning to introduce this open collaboration technique, can build platforms based on it.

Two main aspects should be taken into account by managers while creating or upgrading the idea competition: *maintaining strong community* and *competition design*.

First, growing and maintaining strong community around the competition is a critical success factor for the contest. As it was mentioned previously, besides traditional seekers and solvers, other two groups of participants were acknowledged: 1) *observers* - those participants who evaluate, support and discuss others' ideas and 2) *experts* - professionals that share their knowledge and expertise with solvers without actually participating in the competition. These users need particular attention as they create a "hype" around the contest and a knowledge-flow within it.

To maintain a powerful community, the dedicated section should be established and could possibly include profiles of participants stating their contact information and achievements, and discussion boards. Receiving feedback from peers and experts motivated solvers to improve their own ideas and remain in a community for a longer period of time.

Organizers should not forget about their own contribution as well, all of the updates associated with the competition should be available to users and can be presented either on discussion boards or in dedicated blogs. All technical issues experienced by users should be discussed and solved in a timely manner. The impact of community is not limited to idea competition. Some companies hire those who submitted innovative ideas that were considered valuable for business. From the users' point of view, this can increase the motivation to generate more solutions that can potentially result in a career development.

Secondly, while designing or re-designing the platform itself, seekers should assess it from the perspective of participants. It should be simple and easy to use, and users should be able to find all the information needed by click. Processes associated with the contest including the idea submission, evaluation and idea review should be transparent for contestants. This can be achieved by stating the prizes, rules and conditions for winning clearly in the respective sections of the website. The research has revealed that gamification was another important factor for a number of solvers, therefore seekers should update the number of votes or points collected by users in real-time or even introduce additional team-based tournaments within the main competition.

4.3 Limitations and suggestions for further research

Although our research is one of the first attempts to identify factors driving engagement in idea competitions, there are still some limitations that should be discussed.

One of the key concerns is associated with the innovativeness of the topic. Organizations started to implement idea competitions as a tool for leveraging idea management and crowdsourcing rather recently, and therefore the period of study is relatively short.

The complete holistic model of engagement in idea competitions was developed and proposed for further practical and theoretical use. It is noteworthy that only currently existing and

functioning platforms were analyzed. In the future, as the usage of idea competitions penetrates more industries and organizations, other drivers can still be added by scholars.

It has not escaped our notice that industry specifics might have significant impact on the model. Even though one of the platforms analyzed acts as an integrator of challenges from multiple industries, these industries are somehow connected with the field of innovations which limits the scope of our research.

Besides, this study is focused purely on identifying specific factors that influence participants' engagement in open collaboration environment. The engagement itself as well as the contribution of each factor is not measured. Conducting quantitative research assessing and ranking the impact of each driver could be another interesting perspective. Additionally, experiments with manipulated stimuli can be conducted to verify the validity of factors introduced.

CONCLUSION

Innovation has always been in a spotlight of attention, especially for companies operating in high-tech and knowledge-intensive industries. For decades, there has been a need for new techniques and tools to assist and drive innovation management within the organization. Especially, this urge is strong today, it the era of rapid digitalization, when companies have an easy access to large amount of data and people. One of recent tools for companies that are eager to open their innovation funnels and involve external bright minds into the idea management process, is crowdsourcing, more specifically, idea competitions that are based on open collaboration environment.

Even though many companies are now facing this new reality, the theoretical overview has shown that there are several significant research gaps that need to be potentially eliminated. Innovativeness of the sphere in general limits the number of scientific findings. Engagement is considered to be a critical success factor for idea competition, however one of the few scholars who attempted to identify drivers of engagement states that her model is not complete. Moreover, studies that are based on de Vreede's model show a potential for re-designing and finalizing the model.

The topic of this master thesis is *"Innovation through crowdsourcing: factors influencing engagement in idea competitions"*. The research is focused on identifying factors that influence participants' engagement in idea challenges. The *goal* of this study is to create a comprehensive model of participants' engagement in open idea contests.

Due to the innovativeness of the topic and insufficiency of evidence from existing researches, the study is a subject of *exploratory research*.

The key research question raised for the stated research purposes was: "*Which factors influence participants' engagement in idea competitions?* However, to identify factors and complete the model proposed by de Vreede, it was crucial to gain a holistic view of idea management ecosystem. Therefore, the following subquestions were introduced in order to answer the main research question:

- *How are idea competition platforms designed?*
- *How are activities (e.g. discussions, idea submission, idea evaluation) organized?*

- *What are the roles of stakeholders involved in idea competitions?*

- *Why do solvers decide to participate in idea competitions?*

- *What do solvers gain from participating in idea competitions?*

- *What is the ecosystem of idea competitions?*

Four idea competition platforms were analyzed, and two interview rounds took place to finalize the model. During the first round of interviews with 8 respondents, 6 additional drivers were revealed, the scope of the community was broadened introducing two new categories of participants: observers and experts. Further, based on the results of the initial interview round, the model was updated. Subsequently, the second round of interviews with 6 respondents was initiated with an aim to confirm the validity of the model. Finally, having valuable insights from the latter interview round that confirmed the legitimacy of the proposed model, additional 3 factors were introduced, and the model was finalized.

With regards to managerial implications, the refined holistic model can be considered a useful tool for creators of idea competitions (seekers). Two main aspects that need their particular attention were discussed: *maintaining strong community* and *competition design*. To grow and maintain powerful community organizers need to acknowledge efforts of newly introduced groups of stakeholders (observers and experts) and create a user-friendly community space for feedbacks, knowledge-sharing and peer support. Managers who design the competition need to bear in mind all the factors from the finalized model that determine a successful idea contest platform from the user perspective.

Results of the study presented in this master thesis considerably contribute to the elimination of the identified research gap. Additionally, suggestions for future research were stated. Quantitative measurement of the importance of each factor or experiments with manipulated stimuli can be beneficial for further confirmation of the model and deepening the understanding of the phenomena.

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