MASTER

Crowdsourcing critical success factors in SME's towards a successful implementation model

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Crowdsourcing Critical Success Factors in SME’s: Towards a Successful Implementation Model

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Abstract

Crowdsourcing has so far been studied mainly in high-tech, multinational enterprises. Due to a lack of knowledge, entrepreneurs and managers of small firms are deterred to implement this potentially beneficial strategy in their specific organizations. This exploratory research investigates what the critical success factors of a crowdsourcing strategy in small, innovative start-ups are. An understanding of the dynamics that determine crowdsourcing success in small firms, will help entrepreneurs and managers of these firms to successfully implement crowdsourcing strategies in their specific organizations. Drawing on a database of 495 small and medium-sized enterprises (SME’s) that have mentioned to collaborate with users, this study identified cases that are currently using a crowdsourcing strategy. With 8 of these, in-depth interviews were held. Based on a reference model that focuses on critical success factors in large, multinational organizations, this research has identified differing critical success factors for SME’s. Main findings are the roles that social media and a pro-active attitude towards the crowd play in crowdsourcing strategies in small firm settings. In addition, the offering of rewards and the length of the duration to submit ideas to a small firm’s crowdsourcing initiative, seem unimportant in these specific strategies. The most important driver for people to participate in a crowdsourcing initiative of a small firm, are intrinsic motivations such as the feeling to become a part of the product offering. Implications of these findings have resulted in a management blueprint towards successful implementation of a crowdsourcing initiative in SME’s.
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Contents

Abstract .......................................................................................................................................................... 3
Acknowledgements ...................................................................................................................................... 4
Summary ........................................................................................................................................................ 7
1. Introduction ............................................................................................................................................ 11
  1.1 Relevance of this study ................................................................................................................... 12
  1.2 Structure ............................................................................................................................................ 12
2. Theory ...................................................................................................................................................... 13
  2.1 Preliminaries ..................................................................................................................................... 13
    2.1.1 Review methodology ............................................................................................................... 13
  2.2 Theory and recent research ............................................................................................................ 14
    2.2.1 Open innovation – the need to open up .............................................................................. 14
    2.2.2 User innovation – innovative user characteristics............................................................... 15
    2.2.3 Open source software – motivations to freely reveal ......................................................... 16
    2.2.4 Crowdsourcing – a corporate idea-generation approach ................................................... 18
  2.3 Research model ................................................................................................................................ 19
    2.3.1 Crowdsourcing in SME’s ........................................................................................................ 19
    2.3.2 Crowdsourcing critical success factors ................................................................................. 20
3 Method ..................................................................................................................................................... 23
  3.1 Data sample ...................................................................................................................................... 23
    3.1.1 Research demarcation ............................................................................................................. 24
  3.2 Measurement instrument ................................................................................................................ 24
  3.3 Data collection procedure .............................................................................................................. 25
  3.4 Analysis ............................................................................................................................................. 26
    3.4.1 Design solution approach (CIMO) ....................................................................................... 26
Summary

Crowdsourcing is an open innovation strategy that represents the “act of a company or institution taking a function once performed by employees and outsourcing it to an undefined (and generally large) network of people in the form of an open call” (Howe, 2008). It is recently implemented in the new product development (NPD) processes of many large manufacturers (Howe, 2008; Huston & Sakkab, 2006). However, up to now, few studies have demonstrated that open innovation strategies, such as crowdsourcing, also exist in small and medium-sized enterprises (SME’s)(van de Vrande et al., 2009). A survey by the author of this report, held among innovative start-ups that have mentioned to collaborate with users, revealed that the occurrence of crowdsourcing among SME’s is indeed still diminutive. Only 14% of the questioned entrepreneurs is currently applying crowdsourcing in their NPD processes, while at the same time the survey suggests that it could potentially benefit a lot of these firms. This low adoption rate is most probably the result of a lack of knowledge about crowdsourcing in SME’s. Main purpose of this study was to fill this gap. It has aimed to identify critical success factors that are specific for small firm’s crowdsourcing practices.

Theory

A literature review was conducted, revealing (recent) research on open innovation, user-based innovation, motivations to innovate, crowdsourcing and SME innovation. The basis of the theoretical framework is that organizations have to open up their (re)search processes, i.e. enabling research projects to enter and leave the firm’s domain, in order to keep up with their competitors. As a result, the innovation process transforms into an interactive rather than an isolated process in which firms rely heavily on contacts with outside sources, such as their customers (von Hippel, 1986; Laursen & Salter, 2006). According to the literature (Lüthje & Herstatt, 2004; Franke & Shah, 2003; von Hippel, 2009), innovation by customers, i.e. users of a certain product, is not a rare occurrence and the resulting innovations are usually characterized by high levels of commercial attractiveness. These users typically share some characteristics: They express a need before the majority of the market does and are positioned to benefit significantly by obtaining a solution to this particular need (von Hippel, 1986; von Hippel, 1994; Lilien et al., 2002; Lüthje & Herstatt, 2004; Morrison et al., 2004). But after developing an innovation for your own need, why would you freely reveal it to a commercially-driven firm that wants to make profits with your idea? The open source software development literature (Lakhani & von Hippel, 2002; Jeppesen & Frederiksen, 2006; Lakhani & Wolf, 2003; O’Mahony, 2003) offers some answers to this question. People can be intrinsically motivated (fun, challenge, pro-social behaviour, community identification, status within the community) or extrinsically motivated (solution to a need, financial reward, delayed career advancement, market signalling, improvement of skills and experience).

The idea of crowdsourcing is to outsource the phase of idea generation to a potentially large and unknown population, referred to as the ‘crowd’ in the form of an open call (Poetz & Schreier, 2012). Due to the developments in social media, multi-media richness, global accessibility and the fast-decreasing cost of communication and information processing, consumers can now be
involved through a crowdsourcing strategy in the new product development process (Bonabeau, 2009; Kaplan & Haenlein, 2010). Implementation of crowdsourcing practices, is believed to have substantial benefits for firms. Many large multinational enterprises (MNE’s) have started to implement crowdsourcing practices successfully (Howe, 2008).

Past work on innovation in SME’s has shown that there is a great deal of difference in the innovation strategies of small and large firms. SME’s will be confronted with the boundaries of their organizations rather sooner than later. They need to heavily draw upon their networks to find missing resources (van de Vrande et al., 2009; van Vossen, 1998). Crowdsourcing could help SME’s to achieve this, but up to now, no study has yet focussed on the workings of such a strategy in small firms. This is remarkable since SME’s take an increasingly prominent role in the contemporary innovation landscape (van de Vrande et al., 2009). Due to this lack of knowledge about the dynamics of a crowdsourcing strategy in SME’s, entrepreneurs appear to be very hesitant in implementing such strategies, while thus, at the same time, literature and survey results suggest that they might benefit significantly.

Method
To fill this gap, the factors that determine crowdsourcing success in SME’s should be defined and a critical success factor model should be developed. This could in turn lead to managerial recommendations for entrepreneurs and managers of SME’s. A model that focusses on determining factors of crowdsourcing success in large organizations, developed by Walter and Back (2011), was adopted as a reference model. It concludes that crowdsourcing success, measured by the amount of submissions and the quality of submissions, is determined by 6 critical success factors: answer type, specificity, market maturity, duration, rewards, and brand strength.

Based on the survey dataset which was collected during the Accenture Innovation Awards 2012, cases were chosen that were expected to be able to show interesting insights in the workings of crowdsourcing initiatives in SME’s. The cases were selected on the basis of the following four criteria: (1) The firm of concern can be considered an innovative firm since it has launched one or more innovations in the period between 2009 and 2012, (2) it is a small or medium-sized enterprise, meaning that it consists of less than 500 employees, (3) it has mentioned to collaborate/have collaborated with users/customers, and (4) it has listed crowdsourcing as one of the methods the firm uses/made use of to involve customers in their business processes.

Semi-structured interview questions were prepared. Interview questions first focused on testing the existing model in a small firm setting. If the answers of the interviewee did not confirm the reference model, a more explorative mode of questioning was adopted in order to find the critical success factors that were determining for crowdsourcing success in the particular initiative.

8 interviews with the firms’ founders or CEO’s were scheduled over a three-week period in April 2013. 6 of them were held in the offices of the respective firms and all took approximately one hour. 2 interviews were held by telephone and took about half an hour. All interviews were recorded and typed out. A qualitative research analysis software package, named Nvivo, was used to analyse the data.
**Results**

Results of the interviews did not fully confirm the Walter and Back (2011) model. In SME settings, different factors are critical to ultimate crowdsourcing success as compared with large organization settings. The influence of duration and rewards appear to be absent as determining factors for SME crowdsourcing success. People are motivated to participate in a crowdsourcing initiative of a small firm by intrinsic motivations such as the feeling to be a part of the firm/product offering. With regard to brand strength, there seems to be only an indirect effect. It’s more about a product/firm’s visibility and familiarity in the market place. People have to get introduced with the product or firm before they are able to help. The strength of the brand plays a role in this, but there are also other ways to get people acquainted with a firm or offering. The influence of specificity and answer type seem to have the same effect on ultimate crowdsourcing success in SME’s as in MNE’s. However, in an SME crowdsourcing initiative, two additional factors appear to be very crucial: ‘social media commitment and support’ and ‘pro-active crowd management’. Social media has a two-way influence on crowdsourcing success in SME’s. First, using a social media site as a crowdsourcing platform will keep the barriers to entry low, and second, social media can perfectly be used as a free publicity tool to get more people acquainted with the crowdsourcing initiative. Pro-active crowd management does also contribute to crowdsourcing success in SME’s by two means. On the one hand, as a result of a pro-active attitude towards the crowd, a discussion is fuelled, leading to more submissions. On the other hand, this attitude will in the long-term increase the amount of submissions: People are intrinsically motivated to participate later on or in future crowdsourcing initiatives because they feel that they are respected and that their ideas are valued.

**Discussion**

The identification of critical success factors that result in SME crowdsourcing success have led to the construction of a critical success factor model. More than MNE’s, SME’s have to continuously stay in touch with the helpful crowd, most often through new and free communication tools such as social media. This contributes to the expectation that crowdsourcing, as all other open innovation strategies, should be applied differently in SME’s. Based on the SME crowdsourcing critical success factor model, a five-stage managerial blueprint was developed. This blueprint combines management design principles from the literature (Huston & Sakkab, 2006) with SME-specific design propositions developed on the basis of the critical success factors identified in this research.

The developed model and blueprint towards successful implementation of a crowdsourcing strategy in SME’s, are considered major contributions to management practice. Entrepreneurs and managers of SME’s now know which factors to pay attention to when they are planning to launch a crowdsourcing initiative. Results from the survey have revealed that although managers of SME’s are familiar with the concept of crowdsourcing and face difficulties in those phases where crowdsourcing could be a solution, they do not dare or do not know how to launch such an initiative and implement it in their organization. Especially for this group the critical success factor model and the blueprint towards the successful launch of a crowdsourcing initiative is very valuable.
The identification of SME-specific crowdsourcing critical success factors might result in more research at the attitude and behaviour of innovative firms within online communities. The body of literature that assesses the interface of social media and innovation is still scarce. In addition, this study might also generate more attention for the dynamics of other open innovation strategies in SME settings. There isn’t much research done in this field either. This study does thus offer major avenues for further research. Most important, the presented model should be tested quantitatively. This would confirm the relations proposed in this study and determine the explanatory power of each variable.
1. Introduction

Starting point of this study was the results of a survey held by the author among 82 innovative start-ups in the Netherlands. Its purpose was to map the incidence and potential of crowdsourcing strategies in small and medium-sized enterprises (SME’s), i.e. firms consisting of 1 – 499 employees. Such a strategy represents the “act of a company or institution taking a function once performed by employees and outsourcing it to an undefined (and generally large) network of people in the form of an open call” (Howe, 2008). Many large manufacturers of mainly fast moving consumer goods, have recently started to implement crowdsourcing practices in their new product development processes (Huston and Sakkab, 2006; Howe, 2008).

The early phases in the new product development are, despite their obvious importance to the ultimate success of a firm, a research area where scholars still have limited insights with regard to the ideal process (Poetz & Schreier, 2012). Crowdsourcing is recently suggested as a very promising strategy for particularly these early phases of the new product development process (Poetz & Schreier, 2012). According to the survey results, 17,1% and 32,9% of the questioned entrepreneurs face difficulties in respectively the idea generation and concept design phases. For these managers crowdsourcing practice might be a helpful measure. In addition, 23,1% of all respondents thinks it’s hard to find the proper customers to involve, i.e. customers with the right backgrounds and skills. These entrepreneurs could thus potentially benefit a lot from implementing crowdsourcing strategies.

However, the occurrence of crowdsourcing among SME’s is still diminutive: only 14,3% of the questioned entrepreneurs is currently using it as a strategy to involve customers or users in their business processes. It thus seems to be not as widely implemented in small start-ups as it is in large firms. This can however not be the result of unfamiliarity with the concept since 82% of the respondents has mentioned to be familiar with crowdsourcing. So, although the strategy could in potential help a lot of the questioned entrepreneurs, most do not dare to implement it in their organizations.

This is most likely the result of the current state of knowledge about crowdsourcing in small and medium-sized enterprises. Implementation strategies that are available in today’s literature are case descriptions based on large multinational enterprises (MNE’s), i.e. firms with more than 500 employees. These can hardly be generalized to other firms. Firms of a smaller size do therefore not know how best to implement such a strategy in their specific situations. This gap in the literature is remarkable since the modern view on innovation recognizes that small firms take an increasingly prominent role in the contemporary innovation landscape (van de Vrande et al., 2009).

This study aims to fill this gap by defining critical success factors for crowdsourcing strategies in SME’s. Based on these factors a blueprint is developed that helps managers of SME’s to tap into the potential of this strategy. More detailed representations of the above discussed survey results can be found in appendix A.
1.1 Relevance of this study

A study addressing these issues would be a valuable contribution to academia as well as management practice. Open innovation strategies, such as crowdsourcing, have received increasingly attention in scientific research, but so far they have mainly been analysed in large, high-tech multinational enterprises (MNE’s) drawing on in-depth interviews and case studies (van de Vrande et al., 2009). The evaluation and understanding of crowdsourcing is an immature field of research where multiple gaps can be recognized. Few studies have, for example, demonstrated that crowdsourcing strategies also exist in smaller organizations. The survey underlying this research however, has shown that SME crowdsourcing does exist and could potentially benefit these smaller sized enterprises. This has posed the question which factors determine the ultimate success of a crowdsourcing strategy in SME-specific settings. This study addresses that question. Its main academic contribution is the development of a critical success factor model for crowdsourcing in SME’s. This knowledge might increase the attention on SME crowdsourcing in particular, and open innovation for SME’s in general, within the innovation sciences.

Its managerial relevance lies in resolving the uncertainties and risks currently related to the implementation of crowdsourcing practices by SME’s. Although crowdsourcing is a promising strategy to involve customers in a firm’s NPD processes and currently is implemented by many MNE’s, little is known about the workings of the process in SME’s, while especially these firms might benefit significantly from implementing crowdsourcing practices, since they typically are confronted with the boundaries of their firm. Understanding of the dynamics of the approach in such a setting is not just an end in itself, but also a starting point for management recommendations considering the successful implementation of crowdsourcing strategies in SME’s. These statements of do’s and don’ts for managers of small start-ups could lead to general design propositions that suggest how to organize for the successful implementation of a crowdsourcing practice. When these design propositions are combined, a general blueprint towards successful implementation in SME’s will arise. This will allow entrepreneurs to implement crowdsourcing strategies in their respective firms less risky. When the approach is more widely adopted by SME’s, their innovation capacities are generally expected to increase, leading to an increase in economic potential for whole of society.

1.2 Structure

This report is structured as follows: In the following section, theories and prior research of relevant concepts will be discussed, thereby elaborating upon open innovation, user-based innovation, user innovator characteristics, user motivations and corporate crowdsourcing strategies. This is followed by the formulation of a conceptual framework. Section 3 will discuss the methodology that is used to assess crowdsourcing critical success factors in SME’s and the design principles used to form design propositions. This is followed by Section 4 in which the results of the interviews will be presented and a critical success factor model for crowdsourcing in SME’s in constructed. Finally, section 5 will discuss the findings, theoretical and practical implications, and the limitations and directions for further research.
2. Theory

2.1 Preliminaries

This chapter will present results of a literature review, thereby elaborating on concepts that are relevant for the definition and assessment of critical success factors of a crowdsourcing practice in an SME. As such, this study will be positioned in the crowdsourcing literature which is part of the more broader body of open innovation literature.

The theory section of this report will consist of four parts. First, the open innovation paradigm is described. Literature on this topic explains the reasons why most firms need to open up their innovation activities in order to keep up with their competitors. This part thus discusses why firms choose to implement strategies, such as crowdsourcing, to involve customers or users in their new product development processes.

Second, findings from the (lead) user innovation literature are addressed. This research field proves that users are actually capable of developing commercially attractive innovations. In addition, it describes the general characteristics these innovative users usually possess. This part thus shows that customer involvement approaches, such as crowdsourcing, are indeed valuable strategies.

Thirdly the open source software development literature is reviewed. Findings from this research offer insights in the incentives of anonymous people to freely reveal their ideas. This is an important issue since crowdsourcing is based on the (mainly) free revealing of ideas by unknown people.

And fourth, crowdsourcing as a corporate strategy is discussed. Crowdsourcing can be applied for lots of reasons and with multiple different purposes. This section focusses on the phenomenon from a business point of view. So, how can firms make profit in collaboration with the crowd?

2.1.1 Review methodology

The following stages were used for conducting the review: problem formulation, data collection, data evaluation, analysis, interpretation and presentation. Data collection started with the book of Jeff Howe (2006). Although more a journalist than a scientist, he was the first person to come up with the term of ‘crowdsourcing’. This term was then prompted in academic search engines (Google Scholar, Wiley, JSTOR, and ABI/Inform). The search resulted in a relatively limited amount of academically published articles. It became clear that a lot of synonyms were used in the field to describe crowdsourcing initiatives and that the field was relatively young and immature, which explained the limited number of articles discussing this topic. Lars Bo Jeppesen, a lecturer at Bocconi University in Milan, who is active in the field of community-based innovation, provided suggestions for the most important readings in the field of crowdsourcing and community-based innovation. This resulted in a collection of around 20 articles. While reading this initial set of literature, this body was expanded with relevant references found in the
literature, i.e. snowballing. To determine which references to use, the following logic was used: The more often an article is cited in the initial body of literature, the more important this article will be in this research area, given the fact that the initial body of literature is indeed a reflection of the most important articles in the field. This search strategy resulted in around 50 articles that subsequently were evaluated on their quality.

After that, the quality of the literature was evaluated according to three criteria: (1) appearance of the publication source in the 42nd Harzing Journal Ranking (Harzing.com, 2012), using the Erasmus Research Institute of Management Journals Listing (EJL 2012) and the Association of Business Schools 2010 (ABS 2010). (2) Times cited in Google Scholar indicating it’s influence in the field. And (3) publication date.

2.2 Theory and recent research

2.2.1 Open innovation – the need to open up

Evolutionary economics and the strategic management of innovation literature have stressed the importance of firms’ access to a variety of inputs, to find or produce innovative opportunities (Laursen, 2011; Nelson & Winter, 1982; Katila & Ahuja, 2002; Laursen & Salter, 2006; Zhou et al., 2005). In rapidly changing and highly competitive industries, the search for ideas is constrained by resources as well as time. The resulting extreme time pressures may lead firms to adopt local (i.e. within their own organizations and/or markets) search routines since the costs related to local search are relatively low due to its reliability (Laursen, 2011). Most scholars, however, agree that the search process typically requires firms to work with a variety of non-local individuals and organizations (Laursen, 2011; Nickerson & Zenger, 2004). This paradox is the result of the complexity of technological problem-solving- or searching activities. Due to these complexities firms usually find it very hard to get access to a diverse set of knowledge sources.

The downside of too narrow search routines is that the knowledge required to solve a new problem is unlikely to coincide with the organization’s knowledge base (Cohen & Levinthal, 1990; Poetz & Prügl, 2009). Firms will preferably seek to improve and diversify their technological knowledge by searching in zones that enable them to use and to build upon their existing technological knowledge base.

Fuelled by higher average education levels and an increased mobility of knowledge workers, many big firms have recognised this issue and started opening up their search processes for new ideas. This mutation involves dramatic changes to all of a firm’s search processes and is therefore usually described as the ‘open innovation paradigm shift’. Within this paradigm, several methods are proposed to successfully involve external sources in the new product development (NPD) process.

In an open innovation model, the boundary of the firm is porous while it is not in the closed innovation model. The porosity enables research projects to enter and leave the firm’s domain. So, in this model, a company tries to commercialize its internal ideas as well as innovations from
other firms. At the same time it seeks ways to bring its in-house ideas to the market through pathways that are not yet known by the company. This makes the innovation an interactive rather than an isolated process. Open innovation relies heavily on contacts with customers, suppliers and a range of institutions in the innovation system (von Hippel, 1986; Laursen & Salter, 2006).

2.2.2 User innovation – innovative user characteristics

A number of empirical studies on the sources of innovation reveal that often users, rather than manufacturers, are the entities with which a commercially significant innovation starts (von Hippel, 2009). Moreover, further empirical evidence has demonstrated that user-based innovation is not a rare occurrence, and that most of the resulting innovations are characterized by high levels of commercial attractiveness (Franke & Shah, 2003). The traditional manufacturing-centric model in which a user’s only role is to have needs, which manufacturers then identify and fill by designing and producing new products, is outdated (von Hippel, 2005).

However, the majority of the users that usually are selected to provide input data to consumer and industrial market analyses have an important limitation. Their insights into new product needs are constrained by their own real-world experience. They cannot think enough ‘out of the box’ to develop solutions to what they need, or might need in the future (von Hippel, 1994). Above this, most available market research techniques aren’t capable of detecting emerging needs due to pre-determined answer options and the stickiness (i.e. costs to acquire, transfer and use) of information (von Hippel, 1988; Lüthje & Herstatt, 2004; Kristensson et al., 2004; von Hippel, 1994). In addition, meta-analyses of market-segmentation studies suggest that in many fields users’ needs for products are highly heterogeneous (Boudreau & Lakhani, 2011; von Hippel, 2005). Mass manufacturers normally focus on large market segments to capture profits from a large number of customers. This strategy of “a few sizes fit all” is not logical when users’ needs are heterogeneous. So, most users cannot forecast their own needs, firms do not have the appropriate mechanism to detect them and due to the highly heterogeneous nature of customer needs, most of the available commercial product offerings leave many users somewhat dissatisfied.

Firms that innovate to meet customer needs thus seem to face an almost impossible task. But due to some major societal changes, it has become progressively easy for users in today’s world to get precisely what they want by designing it for themselves. The - on average - higher education levels of users, and some environmental factors such as the decreased costs of communication and the increases in computer power, have made the job of designing a solution to a problem yourself quite easy (von Hippel, 2005).

One of the main capabilities needed to successfully innovate is being ahead of the market (Lüthje & Herstatt, 2004). Users that meet this criterion are usually called ‘lead users’. These are “users whose present strong needs will become general in the market place months or years in the future” (von Hippel, 1986; von Hippel, 1994; Lilien et al., 2002; Lüthje & Herstatt, 2004; Morrison et al., 2004). Since lead users are familiar with conditions which lie in the future for most others, they can be considered need-forecasting laboratories for marketing research (von
Furthermore, they are positioned to benefit significantly by obtaining a solution to their needs, and as such they can provide new product concept and design data as well. Empirical findings suggest that the lead user idea generation process generates better results than traditional methods (Lilien et al., 2002).

In some industries, a significant fraction of the innovations are directly initiated by the needs and specific requests of users (Lüthje & Herstatt, 2004). Among these there are industries where even the majority of innovations was fully developed by users. In these cases users did not only express needs, they also generated the initial idea and were present or even dominant in the subsequent phases of the product development process (Lüthje & Herstatt, 2004). Empirical evidence shows that the percentage of users who improve prototypes or develop completely new solutions ranges from 10% to 40% (Lüthje & Herstatt, 2004). Industries where a majority of the innovations was developed by users are characterized by innovative users who use a certain product extensively (e.g. scientific instruments, extreme sports equipment) As a result, they are more able to express emerging needs than the manufacturer, who depends on its marketing research methods. But also in very broad consumer markets, like in the fast moving consumer goods market, there are some well-known examples of innovations developed by users (Lüthje & Herstatt, 2004).

So, there is strong empirical evidence that user innovation exists, and even dominates the development of innovation in certain industries. User innovators are typically users who express a need before the majority of the market does, and are positioned to benefit significantly by obtaining a solution to this particular need.

2.2.3 Open source software – motivations to freely reveal

In the former section it was discussed why some users start innovating for themselves. But innovate for your own benefit is one thing, freely revealing it to a central organizing team, most often a firm, that subsequently will try to make profits with what you developed, is something else. Open source software development projects are “Internet-based communities of software developers who voluntarily collaborate to develop software that they or their organizations need” (von Hippel & von Krogh, 2003). The research on open source software development projects offers us some major insights in why users contribute to corporate initiatives. Furthermore, open source software development efforts can be considered a forerunner of all other community-based innovation strategies (von Krogh & von Hippel, 2006). As such, it provides us with some historical insights into the methods in this research field.

Open source software projects have offered eye-opening examples of innovation practices that nobody could have imagined. It broke with many established assumptions about how innovation ought to work. Before the emergence and clear success of open source projects, it was assumed, for example, that a requirement to freely reveal one’s innovation would inevitably lead to the destruction of incentives to innovate, due to free-riding by others on the result of the innovator’s labour (von Krogh & von Hippel, 2006). Driven by the success of many open source software development projects, practitioners from many other fields than software development have tried
to apply ‘open-source-like’ development projects in their own respective industries (von Krogh & von Hippel, 2006). Much of the theory currently known about crowdsourcing emanates from the literature on open source. Knowledge about the motivations to participate in open source and other community-based projects is a good example of this.

Several reasons have been suggested in the literature (von Hippel, 2005; Lakhani & Wolf, 2005; Boudreau, 2011; Boudreau & Jeppesen, 2012) that could explain why users are willing to innovate themselves. Among them are enjoyment, costs related to the transfer of sticky information, and other economic intentions. However, as mentioned before, innovate for your own benefit is one thing, freely revealing it to a central organizing team, most often a firm, that subsequently will try to make profits with what you developed, is something else. In an online community setting, the firm hosting a product platform is in the position to benefit because new product features developed by users from the community are shared on a user-to-user basis, and additionally, the firm can pick up the innovations and integrate them in future products (Jeppesen & Frederiksen, 2006). The platform is therefore from the firm’s point of view an innovation and idea generator, a test lab for products, and a cheap alternative to after-sales support. Engaging in such a firm-hosted user community as a user, on the contrary, appears to be irrational and altruistic behaviour.

Literature on motivations to participate in open source software development projects suggests that there are multiple reasons for users to join firm-hosted developer communities. These are intrinsic and extrinsic motivations (Lakhani & von Hippel, 2002; Jeppesen & Frederiksen, 2006; Lakhani & Wolf, 2003; O’Mahony, 2003).

When intrinsically motivated, a person is moved to act for the fun or challenge entailed rather than for external pressures or rewards (Lakhani & von Hippel, 2002; Boudreau, Lacetera, Lakhani, 2011; Lakhani & Wolf, 2003). Especially when the task provides feelings of creative discovery, a challenge overcome and a difficulty resolved, while at the same time is within a person’s skill level, it is often perceived as enjoyable.

A second group of intrinsic motivations is about pro-social behaviour, community identification and status within the community. Individuals may be socialized into acting appropriately and in a manner consistent within the norms of a group. In open source projects, collectivism and the absence of selfishness are the norm. Additionally, contributing to open source projects may enhance one’s reputation within the community. This in turn may yield delayed extrinsic pay-offs such as advancement of careers, ego-gratification, and status (Lakhani & von Hippel, 2002; Boudreau & Jeppesen, 2012).

Thirdly, there is a group of extrinsic motivations. The incentive to create a solution to one’s own particular needs (Lakhani & von Hippel, 2002). And, although open source projects are usually perceived as volunteer enterprises, the possibility of firms hiring programmers to participate in the development of open source software should not be ignored (Lakhani & Wolf, 2003). A firm hosting an online community might kick off the project by asking some software developers to start with some lines of code. Finally, delayed benefits as career advancement, market signalling, and improvement of skills and learning might also be important benefits. Especially these latter
benefits seem to be the leading motivation for the ‘mundane but necessary tasks’ that also have to be completed to develop software (Boudreau & Jeppesen, 2012).

2.2.4 Crowdsourcing – a corporate idea-generation approach

A corporate innovation strategy that tapes into the knowledge of the ‘crowd’ outside the area of software development, is crowdsourcing. The name of the process is a collation of the terms crowd and outsourcing and is defined as follows:

Crowdsourcing: “crowdsourcing represents the act of a company or institution taking a function once performed by employees and outsourcing it to an undefined (and generally large) network of people in the form of an open call. This can take the form of peer-production (when the job is performed collaboratively), but is also often undertaken by sole individuals” (Howe, 2008).

As such, a crowdsourcing approach can be considered a blend of the lead user method on the one hand, and an open source approach on the other.

But, where open source involves allowing access to the essential elements of a product to anyone for the purpose of collaborative improvement to the existing product, with the continued transparency and free distribution of the product through the various stages of the open development, crowdsourcing is a hybrid model that blends the transparent and democratizing elements of open source into a feasible model for doing profitable business (Brabham, 2008).

In the crowdsourcing idea-generation process a number of not predefined or pre-selected users help in defining what a potential new product should do and they also define how it should work (Brabham, 2009). The main difference between this approach and the lead user approach is that the lead user process is based on a selection of users by the firm, while the crowdsourcing approach is based on self-selection. Furthermore, whereas the lead user approach facilitates the idea-generation process within an offline and physical face-to-face setting, the crowdsourcing idea-generation process relies on modern ways of communication through the internet.

The internet is not only the mean for broadcasting the problem, it was, in general terms, also the initiator of the method. The internet offers new simplified modes of communication between producers and consumers on a large scale (Bonabeau, 2009). Consumers can now be incorporated virtually into the new product development process. Especially the recent developments in social media, multi-media richness, global accessibility and the fast-decreasing cost of communication and information processing are crucial facilitators of the process (Kaplan & Haenlein, 2010).
2.3 Research model

The former section introduced crowdsourcing as an open innovation strategy to involve users in the (early phases) of the new product development process. As mentioned in the introduction, the current state of knowledge about crowdsourcing is insufficient to implement it successfully in small and medium-sized enterprises. This study will focus on how to organize a crowdsourcing strategy in such a setting. There are many organizational and structural differences between SME’s and MNE’s that might ask for a different implementation approach. This section addresses these differences and introduces a tentative critical success factor model of crowdsourcing for MNE’s. This model will be used as a starting point to determine the critical success factors of crowdsourcing in SME’s. Based on these critical success factors this study will attempt to develop a preliminary blueprint towards the successful implementation of crowdsourcing initiatives in SME’s.

2.3.1 Crowdsourcing in SME’s

Up to now, few studies have demonstrated that open innovation also exists in small companies. This is remarkable since the modern view on innovation recognizes that small firms take an increasingly prominent role in the contemporary innovation landscape. Van de Vrande et al. (2009) report for example that SME’s accounted for 24% of total R&D spending in 2005, compared to only 4% in 1981. As discussed in the previous sections, crowdsourcing is generally considered as a new and very promising innovation strategy in the open innovation paradigm. SME’s, however, do not seem to engage in these and other open innovation practices, although they thus account for a significant part of today’s innovation practice expenses.

This might be the result of certain strengths and weaknesses of SME’s compared to MNE’s. SME’s are found to be hampered by a lack of financial resources, scant opportunities to recruit specialized workers, and small innovation portfolios so that associated risks cannot be spread (Vossen, 1998). Networking is considered crucial to overcome these problems in the innovation process (van de Vrande et al., 2009). SME’s will be confronted with the boundaries of their organizations rather sooner than later. They need to heavily draw upon their networks to find missing resources. Therefore, open innovation in general, and more specifically, crowdsourcing might be a beneficial strategy for small and medium-sized firms too.

Past work on innovation in SME’s has also shown that there is a great deal of difference in the innovation strategies of small and large firms (Vossen, 1998; van de Vrande et al., 2009). The innovation processes of large firms are typically characterised by more structured and professionalised processes. As a firm grows it increasingly develops and applies formal structures, recruits specialised workers, introduces managerial layers, rules and procedures, and develops structures for licensing IP, venturing activities, and external participations (van de Vrande et al., 2009). A larger size also enables the firm to diversify and grow their innovation portfolios to spread risks and to reserve structural funds to finance innovation (van de Vrande et al., 2009). Based on these factors, it is expected that the extent to which a firm engages in open innovation...
search practices is contingent with its size. So, the bigger the firm, the more likely it is that it has implemented crowdsourcing strategies.

This is manifested in the crowdsourcing literature, where the focus is almost solely on crowdsourcing practices in MNE’s. However, given the need for SME’s to draw upon their networks, crowdsourcing seems to be a perfect mean for especially SME’s to increase the productivity of their innovation strategies.

2.3.2 Crowdsourcing critical success factors

To the author’s knowledge, no published academic study has yet focused on the factors of a crowdsourcing strategy that determine its success. Various success stories (e.g. Howe, 2008; Huston & Sakkab 2006) of large multinational enterprises have accelerated the research on crowdsourcing. However, these only studied the phenomenon from a conceptual point of view; information systems research mainly focused on the design patterns to define the different types of crowdsourcing, economics developed models of prize structures or incentive schemes, and sociologists mostly searched for intrinsic motivation factors among the solver crowd (Walter & Back, 2011). Based on this body of literature, there are various assumptions on influential factors, but there is less clarification on which of those should be applied to support high and valuable outcomes (Walter & Back, 2011).

Walter and Back (2011) have been the only ones that have empirically assessed the success factors of a crowdsourcing strategy empirically. This study has not been published in a journal but is available in the MCIS 2011 Proceedings database. It argues that mostly extrinsic motivations, especially rewards for best ideas, are used to guarantee high amounts and good quality of ideas (Walter & Back, 2011). Internal and behavioural factors which are directly dependent and only measurable by interacting with the solvers, are thus excluded, e.g. measuring their individual efforts (Lakhani & Jeppesen, 2007), their networks (Franke & Shah, 2003), their skills and backgrounds (Lakhani & Wolf, 2003). Walter and Back have proposed a model of external and adaptable success factors of the crowdsourcing process. Figure 1 shows the model developed by Walter and Back (2011).

As one can see in the model, crowdsourcing success is composed of two dependent variables: the quality and the amount of the ideas and/or solutions submitted. The higher the average quality of submitted ideas, the more value a firm can capture from these ideas. For the amount of submitted ideas, the argumentation is not that straightforward. After all, large amounts of submissions may lead to higher transaction costs since the firm has to unravel valuable from useless ideas, and hence lower the ROI of the crowdsourcing initiative. However, this might only be a problem for very large organisations that have set high rewards on open and popular crowdsourcing platforms. For smaller companies, one can argue that the more ideas submitted, the higher the chance that there are very good solutions, the bigger the crowdsourcing success.

Walter and Back (2011) find that amount and quality of ideas are affected by different kinds of external factors. These are briefly discussed in the remainder of this section.
Solvers, i.e. people that post a solution or idea, turn out to be attracted by the pure existence of a firm’s corresponding brand (Leimeister et al., 2009; Walter & Back, 2011). In addition, the strongest brands are usually brands of large firms which have appropriate resources to reach a large amount of people. SME’s do typically not have a strong brand name. Especially the start-ups discussed in this study haven’t had the time and resources to establish a widely visible brand. They thus have to come up with other ways to increase the visibility of their firm or crowdsourcing initiative in order to attract a crowd of sufficient size.

**Rewards** is the most important driver for solvers to come up with a solution or an idea (Brabham, 2008). Monetary incentives are widely used, but mainly have an effect on the amount of ideas posted, and less on the quality of ideas. This could lead to higher transaction costs due to the need to unravel useless contributions from valuable ideas (Walter & Back, 2011). However, as discussed before, extrinsic motivations, mainly monetary rewards, are the leading motivation to participate. SME’s are expected to not have sufficient resources to offer attractive monetary rewards. They thus have to come up with other incentive schemes to attract people to submit.

The time that solvers can submit ideas also has a positive effect on the ultimate success of the crowdsourcing initiative. The longer the **duration**, the more solutions will finally be submitted (Leimeister et al., 2009; Walter & Back, 2011). This is probably because over time more people are reached through the internet.

The more **specific** a challenge or task is, the lower the crowdsourcing success (Leimeister et al., 2009; Walter & Back, 2011). When the task is characterized by high complexity, less solvers
possess the right skills to come up with an idea. As a result, less ideas are posted which in turn leads to a limited amount of options the firm can choose from. Since less people possess the right skills to come up with a proper solution, one might expect the average quality of the submissions to be somewhat lower than in cases where easy-to-answer questions were posted. This is the result of unqualified people that still want to contribute.

The suggested type of answering will lead to different outcome levels of idea contests. Categories of answering types are naming, designing, technical solutions, and business solutions. Designing and technological solution answering types seem to result in higher quality submissions. This is in line with the literature that states that crowdsourcing is especially useful for the early stages of the NPD process.

The initial model of Walter and Back (2011) shows a sixth significant predicting variable. This variable is named market maturity and will be left out of analysis for this study. In the study of Walter and Back (2011) market maturity refers to maturity (i.e. age) of the platform on which the contests were posted. Since in this study not all crowdsourcing initiatives make use of already existing crowdsourcing platforms, this variable is not relevant in this particular research setting. In addition, Walter and Back (2011) derived the variable from the open source software development literature. The variable isn’t considered in crowdsourcing cases from other industries. In open source, collaboration between solvers is the norm and as a result, market maturity might in such situations reflect the experience of the collaborative community as a whole and hence be of influence to ultimate crowdsourcing success.
3 Method

The model introduced in the former section has served as a template for determining the critical success factors of crowdsourcing success in SME’s. Interview questions focused on the variables just discussed and tested whether the model is applicable to SME’s too. The research methodology of this study will thus primarily be that of qualitative template analysis. Template analysis is the process of organising and analysing textual data according to themes (King, 1998). But, if during the interview it became clear that the reference model didn’t support the views of the interviewee, questions focused on the not-yet modelled variables and relations that are distinctive for crowdsourcing in SME’s. For this explorative research objective, a grounded theory approach was adopted in order to find critical success factors in the dataset through a process called coding. Section 3.4 about the data analysis will go into more detail on this methodology.

3.1 Data sample

Starting point of this study was a survey database of Dutch innovative firms, that was collected by Accenture during the Accenture Innovation Awards 2012. Based on their innovativeness and commercial potential, innovative products and services were awarded in five different industries: Communications, Media and High-tech (CMT), Financial Services (FS), Consumer Goods and Services (CGS), Health and Public Services (HPS), and Energy.

Out of 1017 subscriptions for the Accenture Innovation Awards 2012, 495 firms were small or medium sized (1 – 499 employees) and had pointed out in their subscription form that they collaborated with their customers. These 495 cases were the starting point for the survey of this study.

Of the 495 cases, 462 were actually reached by e-mail. 33 requests were either sent to false e-mail addresses or resulted in out-of-office replies. A total of 87 respondents replied, of which 82 completed the whole questionnaire. This results in a response rate of around 18%. Interviews were held with respondents of the survey who had mentioned that they make use of crowdsourcing practices. As a result, cases were selected that met the criteria below. 8 of these cases were successfully contacted for interviewing.

- The firm of concern can be considered an innovative firm since it has launched one or more innovations in the period between 2008 and 2012 (Accenture Innovation Awards subscription prerequisite)
- The firm of concern is a small or medium-sized enterprise, meaning that it consists of less than 500 employees.
- The firm of concern has mentioned to collaborate/ have collaborated with users/customers.
- The firm of concern has listed crowdsourcing as one of the methods the firm uses/ made use of to involve customers in their business processes.

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1 Data was obtained via Accenture, a large multinational management consulting firm. Innovative firms that made up this study’s sample were classified according to Accenture’s organization structure. An introduction of this firm is given in the acknowledgements section of this report.
3.1.1 Research demarcation

The research scope of this study is bounded by three demarcations. First, the concept of small and medium-sized enterprises should be defined in order to understand which firms are included in the analysis and which aren’t. For this study the most general definition is followed: small enterprises employ 1 to 99 employees, medium-sized enterprises 100 to 499 (van de Vrande, 2009). Therefore, firms smaller than 500 employees are included. However, since this study’s data consists of young start-ups, one can expect a large share of small enterprises in our sample.

Second, the young start-ups in this study are all enterprises that are (1) not older than 3 years, (2) based in the Netherlands, and (3) have introduced at least one innovative product. Most of them are active in the industry which is called CMT (Communications, Media & Technology) in Accenture’s organization structure. Telecom organizations, internet and web developers and cable-television providers are typical examples of organizations that fit within the communications industry. The media industry consists of television channels, online media developers and social media related organizations. The last industry, ‘technology’, refers to hardware and software-related organizations like television manufacturers and commodity/electronic enterprises. A large part of the start-ups in this category is active in the field of mobile app and online website development. The innovations in this segment are therefore mainly service oriented.

Thirdly, the concept of crowdsourcing in this study refers to commercial initiatives that intend to involve an undefined community of internet users in the development process of a new product or service. Furthermore, the research will focus on the early stages of the new product or service development process. With these early stages the phases of idea generation, concept development and concept testing are meant. Also strategies that involve the community in the production phase are assessed. The community in this research is thus either a source for ideas and technological solutions, or a co-producer of a certain product.

3.2 Measurement instrument

Management of the selected firms is expected to have valuable knowledge about the critical success factors of their specific crowdsourcing initiative. This knowledge is qualitative data. The most commonly used method to gather qualitative data is the interview. A useful concept in describing types of interviews is the continuum; any particular interview can be placed somewhere between

‘unstructured’ and ‘structured’. The ‘unstructured’ pole is closer to observation, while the ‘structured’ use of closed questions is similar to types of questionnaires. In this study, an existing model from the literature is used as a reference model. The appropriate data collection method here is therefore a semi-structured interview.

A semi-structured interview is a qualitative method of inquiry that combines a predetermined set of open questions (i.e. questions that prompt discussion) with the opportunity for the interviewer to explore particular themes or responses further. As such, it does not limit respondents to a set
of pre-determined answers. This allows the researcher to understand how interventions work and how they could be improved. It also allows respondents to discuss and raise issues that the researcher did not consider. A semi-structured interview is thus the perfect way to achieve more understanding of the crowdsourcing practices in SME’s.

Predetermined questions were composed based on the critical success factor of crowdsourcing for MNE’s in the model by Walter and Back (2011) (figure 1). Table 1 shows an overview of these predetermined questions.

<table>
<thead>
<tr>
<th>Critical success factor</th>
<th>Predetermined questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount (dependent)</td>
<td>How many ideas/solutions were submitted?</td>
</tr>
<tr>
<td>Quality (dependent)</td>
<td>What was the degree of quality of all ideas?</td>
</tr>
<tr>
<td>Brand strength</td>
<td>Do you think your open call could reach enough solvers on the internet?</td>
</tr>
<tr>
<td></td>
<td>Do you think the image of your concept attracts people to submit an idea?</td>
</tr>
<tr>
<td>Reward</td>
<td>Did you offer rewards? What did you offer the solver with the best idea?</td>
</tr>
<tr>
<td>Duration</td>
<td>How long were solvers able to submit ideas?</td>
</tr>
<tr>
<td>Specificity</td>
<td>What was the required skill level, necessary to submit an idea/solution?</td>
</tr>
<tr>
<td>Answer type</td>
<td>What was the type of answer you asked for? Naming, designing, engineering, or business solution?</td>
</tr>
<tr>
<td>Potential additional factors</td>
<td>Are there, to your opinion, additional critical success factors of crowdsourcing success in an SME setting?</td>
</tr>
</tbody>
</table>

3.3 Data collection procedure

As mentioned before, the data collection procedure started with an online survey. 462 SME’s that had participated in the Accenture Innovation Awards 2012 were reached through an e-mail from the corporate Accenture e-mail address of the author. From there they were requested to open a link to the online survey. 82 SME’s responded by filling in the whole questionnaire. Out of those, 12 SME’s met the criteria as mentioned in section 3.1.

CEO’s or founders of these firms were contacted by e-mail again from the same Accenture e-mail address. They were asked to participate further in this research and to mention their preferences with regard to scheduling a meeting for the interview. This resulted directly in four appointments. Companies that didn’t react on the e-mail were contacted by phone from an Accenture office phone number. With 8 out of 12 SME’s, appointments were made to do the interview. 2 companies couldn’t be reached since they didn’t react on the e-mail request and no phone numbers were available. Another 2 mentioned to not be willing to collaborate further on in this research.

With 6 SME’s face-to-face meetings were scheduled. These were all held in the offices of the respective firms. Data collection was done over a three-week period in April 2013. All interviews took about one hour and were recorded. 2 SME’s were interviewed by phone. Phone calls were held from the Accenture office since it offers perfect means to perform and record a conference call. These interviews took both about half an hour.
3.4 Analysis

In order to accurately analyse the data, different software tools were adopted. The survey, which was the inducement of this research, only asked for very basic statistics, no advanced statistical software tools like SPSS or MatLab were needed. Therefore the easy-to-use Microsoft Excel was in this case a satisfactory method for quantitative data analysis.

For the qualitative research a software tool was needed too. Analysing a total of almost 8 hours of interview conversations in a structured way is very difficult without one. The qualitative tool used in this research is Nvivo. The tool is able to store and analyse structured as well as semi-structured data like interviews, surveys, field notes, web pages, journal articles, audio fragments and more. These data sources can contain text documents, PDFs, datasets, audio, video, pictures, memos etc. In Nvivo, one can gather all material from different sources by topic, theme or case. This process is called coding. Nodes give an overview of all coding, they are coding containers. By using these nodes one is able to gather related material in one place so that one can look for emerging patterns and ideas. In this study interviews were stored as audio fragments as well as typed-out text documents.

3.4.1 Design solution approach (CIMO)

In order to actually develop a solution to the problem statement, this study takes a design science approach. The main purpose of this study is therefore to develop design propositions following the CIMO-logic. This logic is constructed as follows: in this class of problematic Contexts, use this Intervention type to invoke these generative Mechanisms, to deliver these Outcomes (appendix C) (Denyer et al., 2008).

Design propositions are developed through the synthesis of, in this case qualitative data. A method to synthesize qualitative data according to academic standards is realist synthesis (Denyer et al., 2008). The realist’s goal is to understand how interventions or systems work in various types of contexts. In the case of this study, how does the process of crowdsourcing, with its critical success factors as defined by Walter and Back (2011), work in a different context, namely that of SME’s? This preliminary model by Walter and Back (2011) has to be revised and refined by synthesizing the results of case studies of crowdsourcing practices in SME’s.

The key to synthesizing research for the purpose of informing practice lies in the developing and understanding of the underlying generative mechanisms. This gives a basic theory on why certain outcomes emerge. Whatever change occurs, it is dependent on the nature of the context, which is comprised of the characteristics of the actors and the circumstances of the program. Underlying mechanisms can be expected to generate a range of different outcomes when implemented in a series of different contexts (Denyer et al., 2008). Interviews and the literature review therefore focused on identifying the underlying generative mechanisms of the crowdsourcing approach. It was asked why certain interventions were expected to produce intended outcomes in different contexts.
4 Results

This section discusses the results of the 8 interviews that were held with CEO’s or founders of the selected SME’s. It first starts with a case study analysis in which the SME’s are introduced and the findings with regard to the reference model per SME are presented. Afterwards, a cross-case analysis is performed that discusses general findings across all interviews. Several tables with case study quotes are presented in order to support these general findings.

4.1 Case studies

Table 2 depicts some crucial characteristics of the interviewed SME’s. For 2012, all cases expected to generate revenues, in 2011 all except one did. Two cases didn’t provide data regarding their revenues and income. Considering age and number of employees, table 2 shows that all cases met the criteria of being a young, innovative, small or medium-sized start-up. Following the literature on crowdsourcing, one can distinguish between different forms of crowdsourcing. Most cases can be defined as a corporate initiatives (i.e. a firm posts a problem or a challenge openly and people self-select to offer a solution), but also one intermediary platform (i.e. a platform not owned by the crowdsourcing firm, but is instead hosted by a specialized firm that builds upon a vast expert panel) was interviewed. More clarification on these classifications can be found in appendix B-I. The following paragraphs discuss each interview case briefly.

<table>
<thead>
<tr>
<th>Characteristic/firm</th>
<th>Age (as of summer 2012) (in years)</th>
<th>Number of employees</th>
<th>Revenues in 2011 (in €)</th>
<th>Type of crowdsourcing applied*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cerberus (case 1)</td>
<td>2</td>
<td>1</td>
<td>30,000</td>
<td>Corporate initiative</td>
</tr>
<tr>
<td>Improgression (case 2)</td>
<td>2</td>
<td>1</td>
<td>2,000</td>
<td>Corporate initiative</td>
</tr>
<tr>
<td>LEEV Mobility (case 3)</td>
<td>2</td>
<td>4</td>
<td>100,000</td>
<td>Corporate initiative</td>
</tr>
<tr>
<td>Zowerktpensioen.nl (case 4)</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>Corporate initiative</td>
</tr>
<tr>
<td>Dichtblij (case 5)</td>
<td>1</td>
<td>2</td>
<td>25,000</td>
<td>Corporate initiative</td>
</tr>
<tr>
<td>Boodschapp (case 6)</td>
<td>2</td>
<td>10</td>
<td>60,000</td>
<td>Corporate initiative</td>
</tr>
<tr>
<td>Webclusive (case 7)</td>
<td>3</td>
<td>10</td>
<td>-</td>
<td>Corporate initiative</td>
</tr>
<tr>
<td>Brandsupply (case 8)</td>
<td>3</td>
<td>8</td>
<td>-</td>
<td>Intermediary platform</td>
</tr>
</tbody>
</table>

* An explanation of the different types of crowdsourcing and the argumentation why cases are classified as depicted in this table, are given in appendix B-I

**Cerberus game – case 1**

Cerberus game is an online serious game. It trains people to be able to develop maps on the basis of satellite data. Together, the crowd is able to map large geographic regions. A group of 100,000 gamers can map 900 km² a day very accurate. The project started with mapping of the surface of
planet Mars. Research demonstrated that the crowd, when properly trained, can be as accurate or even more accurate in mapping than a NASA expert. The gaming element is used as a training tool, but also increases enjoyment and results in revenues through mini-transactions. Now, the company is focusing on mapping disaster areas. A pilot mapping the Fukushima nuclear infected area proved the applicability of the concept. The company plans to scale up in three months with a (Farmville-like) Facebook-integrated game. In this concept, the crowd is used as a developer community on the one hand, and as a source of revenue on the other.

**Improgression – case 2**

Improgression is a web-based service that analyses first impressions. Subsequently, it offers training tools to improve an impression. The company works as a business to consumers as well as a business to business service provider. For the b2b concept improgression analyses, for example, sales persons of large commercial organizations. People are assessed on a number of criteria by an anonymous crowd, a focus group, or an expert panel. In this concept, the crowd is used to assess other people. It is based on the idea that a group of people is better able to really detect improvement points in one’s presentation and provide feedback.

**LEEV Mobility – case 3**

LEEV Mobility is a company that develops one-person electric vehicles. The firm has two innovative products in its product portfolio: The Mantys and the Jack. The Mantys is currently used on golf courses, in warehouses and on airports. For the Jack, the firm is currently applying for a license to be able to use it on the public road. The development of the Jack was funded by a crowdfunding project. Two existing platforms were used: the Dutch Symbid platform and the US-based Kickstarter. Especially the Symbid platform allowed the developers to discuss with the crowd during the (concept) development phase. Besides the aim to get funding, Symbid was thus used as a crowdsourcing platform as well.

**Zowerktpensioen.nl – case 4**

Zowerktpensioen.nl is a web-based service provider specialised in explaining complex products to consumers. The company is named after their first project in which they built a website that carefully explained the complex Dutch pension system. As a result of this initiative, the founders were hired on a consultant basis by several firms to help explaining other complex products. During development extensive collaboration with the crowd through social media such as Twitter was crucial to understand which topics to explain and how. Currently the company is building a website explaining the Dutch mortgage system. In this development the crowd is used extensively again.
Dichtblij – case 5
Dichtblij is an online platform that strives to prevent unemployment. It matches employer and employee without using vacancies. On vacancy sites the highest bidder can get its vacancy at the top of the lists, even when this vacancy is not the one the consumer/employee is searching for. Dichtblij uses a matching principle of employees, employers who want to get rid of employees, and employers searching for people. As such it stimulates the ‘work-to-work’ movements in especially the SME labour market. The concept is based on social cohesion in geographical regions where it is hard for employers to fire people with which they often have personal relations. The crowd was used in the idea generation- and development phase of the concept.

Boodschapp – case 6
Boodschapp is an online and mobile platform which allows users to compare food products and groceries on a number of criteria: e.g. price, quality, health, and sustainability. In addition, the platform provides several niche criteria on which people can filter. People with an allergy to gluten can see in a glance which products they can buy and which not. The system is based on barcodes on products that you can scan with your mobile phone. The app immediately gives you an overview of all alternatives and provides you the opportunity to compare on self-selected criteria. Information on these products is derived from professional nutritionists. The crowd was involved to generate ideas on the workings of the product and to suggest criteria the app should be able to support.

Webclusive – case 7
Webclusive is a consultant and software development firm which builds crowdfunding platforms and supports crowdfunding initiatives. It has developed Netherlands’ two biggest crowdfunding platforms; voordekunst.nl and 1procentclub.nl, and has supported more than 500 crowdfunding initiatives. This accounts for a market share of 75%. Software development is performed in collaboration with the online open source software developer community. Webclusive’s solutions are therefore partially open sourced.

Brandsupply – case 8
Brandsupply is an online crowdsourcing platform in graphical design. Firms can post challenges and pay a reward for the winning design. Concept designs are developed by the Brandsupply-community which consists of almost 10,000 designers. The platform has received almost 200,000 designs in 3000 contest in 3 years. Brandsupply offers a cheap solution to the usually expensive design bureaus. In addition, a client has the opportunity to pick from – on average – more than 60 concept designs. Because of the cost-effectiveness Brandsupply.nl is especially focused on SME’s.
With regard to the relations between the variables and ultimate crowdsourcing success according to the reference model, Table 3 offers an overview of which relations were identified during the interviews. 'n' in this table means that the relation is not identified in that particular case. ‘+’ and ‘-’ refer to the direction of the relation when it was identified in a particular case.

Considering Table 3, one can conclude that especially the influence of rewards and duration seems to be absent in SME’s. Brand strength is valued as an important variable by the interviewees although it was often mentioned as a sub factor contributing to a more broader variable that explains the degree of the familiarity of the crowd with the crowdsourcing initiative.

With regard to specificity, the results seem to confirm the relations as depicted in the reference model. Cases 2, 5 and 6, where no influence of specificity was identified, all ask the crowd for opinions. Since for opinions generally no certain skill level is required, the influence of specificity is absent in these cases. Answer type was only found irrelevant in one case. Quotes that support the findings regarding specificity and answer type, i.e. the cases that appear to be similar in MNE and SME settings are depicted in Appendix B-II. The variables rewards, brand strength and duration are further discussed in the cross-case analysis.

**Table 3: Identified relations per interview case**

<table>
<thead>
<tr>
<th>Relation/Case</th>
<th>Case 1</th>
<th>Case 2</th>
<th>Case 3</th>
<th>Case 4</th>
<th>Case 5</th>
<th>Case 6</th>
<th>Case 7</th>
<th>Case 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rewards – amount</td>
<td>n</td>
<td>n</td>
<td>n</td>
<td>n</td>
<td>n</td>
<td>n</td>
<td>n</td>
<td>+</td>
</tr>
<tr>
<td>Brand – amount</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>n</td>
<td>+</td>
</tr>
<tr>
<td>Specificity – amount</td>
<td>-</td>
<td>n</td>
<td>-</td>
<td>-</td>
<td>n</td>
<td>n</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Duration – amount</td>
<td>n</td>
<td>n</td>
<td>n</td>
<td>n</td>
<td>n</td>
<td>n</td>
<td>n</td>
<td>+</td>
</tr>
<tr>
<td>Specificity – quality</td>
<td>-</td>
<td>n</td>
<td>-</td>
<td>-</td>
<td>n</td>
<td>n</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Answer type – quality*</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>n</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>

*: Answer type is a nominal scale. As a result there is no positive/negative direction. The 'x' here means that there is a relation identified.

**4.2 Cross-case analysis**

The cross-case analysis of the interviews reveals that crowdsourcing success in SME’s is measured by the same two dependent variables as in an MNE setting. The amount and the quality of the submissions appear to be the ultimate predictors of crowdsourcing success. As already visible in the MNE critical success factor model by Walter and Back (2011), most external factors influence the amount of submissions, rather than the quality of submissions. In an SME setting this finding seems to be amplified. Crowd size and the number of submissions seem to be more crucial to crowdsourcing success than the quality of the submissions. Entrepreneurs argue that every submission offers valuable insights. They are more often searching for opinions and assessments that do not ask for high quality standards. Furthermore, they don’t complain about the assumed high transactions costs that, according to the literature, would be related to a large amount of submissions.
In sum, all questioned entrepreneurs seem to be very content with the results of their crowdsourcing practices. For both determinants of crowdsourcing success, i.e. amount and quality of submissions, the interviews generated positive reactions. Views and opinions of the entrepreneurs about these two variables are presented in table 4.

**Table 4: Views and opinions about crowdsourcing success**

<table>
<thead>
<tr>
<th>Crowdsourcing success dependent variables</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Amount of submissions</strong></td>
<td></td>
</tr>
<tr>
<td>“Very content. We have 10.000 qualified members that participate. That results in on average 60 solutions per question and a success ratio of 85%” (Brandsupply)</td>
<td></td>
</tr>
<tr>
<td>“I need around 100.000 solvers. I don’t think that would be a problem. I had to close the subscription for participators because my servers hadn’t had enough capacity yet. Now I’m working in a sort of beta phase with 15.000 international subscribed participators. I’ll open for the big crowd when my servers are ready and all information is protected and safe” (Cerberus)</td>
<td></td>
</tr>
<tr>
<td>“Our app is the perfect way to create a platform community. It has been downloaded 200.000 times only in the Netherlands and still is downloaded more than 100 times a day.” (boodschapp)</td>
<td></td>
</tr>
<tr>
<td>“Our crowd size depends on the question and the client we work for. It could be a crowd of 50, 100, sometimes even a 1000 people. That’s not always easy, but we always get enough reactions.” (improgression)</td>
<td></td>
</tr>
<tr>
<td>“Our developers have built large and very useful online social networks.” (Webclusive)</td>
<td></td>
</tr>
<tr>
<td>“We got a group of 400 people in our community within a week” (dichtblij)</td>
<td></td>
</tr>
<tr>
<td><strong>Quality of submissions</strong></td>
<td></td>
</tr>
<tr>
<td>“Yes, very content on this too. This is also supported when we quantify our results. A success ratio of 85% is very high.” (Brandsupply)</td>
<td></td>
</tr>
<tr>
<td>“My research at the University of Amsterdam already proved that the crowd can create better results than a single NASA expert, especially when you train the crowd. I come to the same conclusion in my professional work. The crowd doesn’t skip a square centimetre, while the expert might get bored by the endless amounts of sand dunes on Mars, for example.” (Cerberus)</td>
<td></td>
</tr>
<tr>
<td>“In terms of quality: every opinion is an opinion. We have the luck that our whole community consists of people that are serious about food and health. These people never post crap.” (boodschapp)</td>
<td></td>
</tr>
<tr>
<td>“Quality of a submission doesn’t matter. It’s not about the truth, it’s about their truths, their opinions. For that reason, every opinion is good” (improgression)</td>
<td></td>
</tr>
<tr>
<td>“In terms of crowdsourcing success, it’s always about: the more the better. There were always some submissions of sufficient quality” (zowerktpensioen.nl)</td>
<td></td>
</tr>
</tbody>
</table>

In table 4 one can see that managers of SME’s and entrepreneurs that make use of crowdsourcing practices are content with the results. However, as some of the quotes already suggest, the journey to that success is not always easy. What are generally the critical factors that determine crowdsourcing success in SME’s?
When findings from the interviews are compared with the reference model, i.e. the Walter and Back (2011) critical success factor model, one can conclude that this model is not fully applicable in an SME setting (see table 3). Table 5 assesses the relations of the reference model in such a setting. It suggests that especially the variables \textit{brand strength}, \textit{rewards}, and \textit{duration} have a different influence on final crowdsourcing success in an SME setting than the Walter and Back model implies. \textit{Answer type} and \textit{specificity} seem to have a comparable influence on ultimate crowdsourcing success in an SME setting. Appendix B-II shows interview quotes that support this latter finding.

\textbf{Table 5: Findings from the interviews in relation to the Walter and Back (2011) reference model}

<table>
<thead>
<tr>
<th>Relation</th>
<th>Brand strength $\rightarrow$ Amount of submissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finding</td>
<td>In an SME setting, brand strength seems to have only an indirect effect on the amount of subscriptions. It's more about a product/firm's visibility and familiarity in the market place. People have to get introduced with the product or firm before they are able to help. The strength of the brand plays a role in this, but there are also other ways to get people acquainted with a firm or offering.</td>
</tr>
<tr>
<td>Supporting quotes:</td>
<td>“Before the digital era, physical distribution generated traffic. People walking by shopping windows got acquainted with your brand name when it was present there. Every (wo)man walking by this shop was a potential buyer of the product. In the digital world, there is no physical distribution, no shopping window. People have to get acquainted with your product through different ways” (Boodschapp)</td>
</tr>
<tr>
<td></td>
<td>“familiarity is very important. Brand strength does only contribute to familiarity. As such it is also very important” (improgression)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Relation</th>
<th>Rewards $\rightarrow$ Amount of submissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finding</td>
<td>In an SME setting, rewards seem to play a less important role. Where in an MNE setting extrinsic motivations, such as rewards, appear to be the main drivers to participate (Walter &amp; Back, 2011), for SME’s it is more about intrinsic motivations. Still rewards could play a role, but managers of SME’s do not have the appropriate resources and try other options to motivate people to participate.</td>
</tr>
<tr>
<td>Supporting quotes:</td>
<td>“Rewards? Nothing. The most important driver for people to help us is that they hope we can offer a solution to their needs” (boodschapp)</td>
</tr>
<tr>
<td></td>
<td>“No rewards. People join just because they enjoy doing it. Sometimes, when we have difficulties reaching a critical crowd size, we raffle an Ipad among the submitters. But it is never the driving motivation” (improgression)</td>
</tr>
<tr>
<td></td>
<td>“People have to be willing to grant you their participation and help. It’s not about physical rewards” (LEEV Mobility)</td>
</tr>
<tr>
<td></td>
<td>“We didn’t offer rewards or prices” (zowerktpensioen.nl)</td>
</tr>
<tr>
<td></td>
<td>“We have implemented a gaming interface. This rewards people with credits that can be used in the game. It are not physical or real monetary rewards” (Cerberus)</td>
</tr>
</tbody>
</table>
Relation: Duration → Amount of submissions

Finding

In an SME setting, duration seems not to be a critical success factor. Posted questions often result in an on-going discussion which does not have a pre-set closing date. When there are monetary or other extrinsic rewards involved, the crowd tends to post more solutions as a pre-set closing date comes closer. When no rewards are offered, which is typically the case in SME settings, duration seems not to have an influence and increases or decreases in the number of reactions are determined by other factors.

Supporting quotes:

“Usually, reactions come in quite fast. But normally we do not close the submission platform until we think we have enough reactions. The more ideas, the better our impression of our users’ needs. Sometimes we even change the question a little bit after some time.” (boodschapp)

“There is never a pre-set duration. And there is always some delay before reactions start to trickle in. We usually keep the submission platform open as long as the client wants. But there is a cross-over point in the amount of reactions that come in. After some time no reactions come in anymore.” (improgression)

“Reactions come in quite fast. The period in which these reactions come in varies from one hour to two or three days. When you do not work with a traditional intermediary platform, there is no possibility to close the submission portal. When you use social media, the question is posted and spreads independently over the web. So, there is no pre-set duration” (zowerkpensioen.nl)

The above table describes differences in the influence of determinants of crowdsourcing success in an SME setting with regard to the reference model. However, in order to develop an implementation model for crowdsourcing in SME’s, one needs to investigate the differences in relations more deeply and finally redesign the model.

As already mentioned before, in an SME setting people are motivated by different reasons than in an MNE setting. The theory section of this report discussed the existence of extrinsic and intrinsic motivations. For people to be willing to help a large multinational, they have to financially benefit themselves too. The general attitude is that these firms have enough resources to compensate for the help. For helping smaller firms other motivations seem to play a crucial role. A whole range of intrinsic motivations is named by the respondents: From a gaming experience, through the fulfilment of a need, to the degree an initiative is socially wanted (table 6). Rewards was only mentioned once as a last resort to attract people. As such, rewards seem not to be a critical factor to the ultimate success of a crowdsourcing initiative in an SME setting, and should be replaced by a more broader defined variable of intrinsic motivations. Table 6 shows an overview of the quotes from the interviews that support this finding.
Table 6: Findings about the role of intrinsic motivations on ultimate crowdsourcing success in SME's

<table>
<thead>
<tr>
<th>Relation: Intrinsic motivations → Amount of submissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finding: <strong>Whereas in an MNE setting monetary/financial rewards appear to be to most important driver for people to participate in a crowdsourcing initiative, in an SME setting it is more about intrinsic motivations. Rewards might only serve as a last resort.</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Supporting quotes:</th>
</tr>
</thead>
<tbody>
<tr>
<td>“People can play a game and can earn credits by analysing different areas. Every area you analyse can provide you additional credits. Think about harvesting in Farmville. The fact that it is a serious game is, to my opinion, not a problem. It just have to be a cool game in which people also have the possibility to compete. That’s why I’m building it as a Facebook-game. It should compete against Farmville and other Facebook games (…) I am also working on ways that people can collaborate in small communities, within your own personal FB network for example. Besides enjoyment, reputation within the community would then be another driver” (Cerberus)</td>
</tr>
<tr>
<td>“The main motivation to help us is that we fulfil a need a lot of customers have (…) We do not offer rewards. A thank you, ‘what a good idea’ or a ‘that’s in our next release’ is important. Stay in contact with the customers (…) They have to feel as if they are co-producers” (boodschapp)</td>
</tr>
<tr>
<td>“The reason to participate for the crowd is enjoyment. They have to think it’s fun to collaborate. Sometimes we offer an additional extrinsic reward: we raffle an Ipad or something like that among the contributors.” (Improgession)</td>
</tr>
<tr>
<td>“People have to be willing to grant you their help. They have to really want to help you. A sustainable concept or another socially wanted initiative might therefore reach a crowd of participators more easy.” (LEEV Mobility)</td>
</tr>
</tbody>
</table>

The finding in table 5 with regard to the relation between **brand strength** and **amount of submissions** already mentioned that **brand strength** only has an indirect effect in an SME setting. According to some, it still plays a role, but only through a variable which in this report will be called the crowd’s **acquaintance with the initiative**. Where it seems easy for large organizations to generate enough ‘traffic’ to their online contests, SME’s have to put a lot of effort to let people know that there is a request for help. People first have to know that a certain product exists and that the start-up might need help, before they can actually help it. All respondents had very strong views on the relation between the crowd’s **acquaintance with the initiative** and the **amount of submissions**. This resulted in a lot of quotes on this topic. Table 7 (next page) shows an overview of these quotes.
Table 7: Findings about the role of acquaintance of the crowd with the crowdsourcing initiative on ultimate crowdsourcing success in SME’s

<table>
<thead>
<tr>
<th>Relation: Acquaintance with the initiative</th>
<th>Amount of submissions</th>
</tr>
</thead>
</table>

**Finding:**

*Where it seems easy for large organizations to generate enough ‘traffic’ to their online contests, SME’s have to put a lot of effort to let people know that there is a request for help. People first have to know that a certain product exists and that the start-up might need help, before they can actually help it.*

**Supporting quotes:**

“I’ve had a lot of rather old-school media attention. That is of course the result of working with such an influential incubator (European Space Innovation Centre red.). I’ve been in De Wereld Draait Door, in the Financieel Dagblad, in articles on nu.nl, in the London Metro newspaper, in the book of Kader Abdollah about science in the Netherlands etc. And also these awards(Accenture Innovation Awards red.) help in getting people acquainted with the initiative” (Cerberus)

“People have to know that it’s there before they can actually help you. A decade ago you had AIDA: Attention, Interest, Desire and Action. That was a linear sort of thing. That has completely changed. Look at Google. They never advertised. And now they are one of the strongest brand names. Word of mouth is thus back again, but now in a digital form. You have to create a certain momentum. From that point on, the attention, the crowd, can start grow exponentially. Before the digital era, physical distribution generated traffic. People walking by shopping windows got acquainted with your brand name when it was present there. Every (wo)men walking by this shop was a potential buyer of the product. In the digital world, there is no physical distribution, no shopping window. People have to get acquainted with your product through different ways” (Boodschapp)

“Being ‘concept of the week’ at the Accenture Innovation Awards was very important for us. Other platforms share that kind of messages. Dutchcowboys, Adformatie etc. That is free publicity and generates a lot of exposure.” (improgression)

“Visibility and familiarity with the offering are very important. This is generated by digital word of mouth. When you’re active in a small geographic region, like I am, this local cohesion, tips from people you trust, are especially crucial” (Dichtblij)

Crowdsourcing in an SME appears to ask for additional critical success factors. When the respondents were asked what the critical success factors of a crowdsourcing strategy would be, their responds were rather unequivocal. On the one hand, expected relations between answer type, specificity, brand strength, and rewards were – at least partly – confirmed. On the other hand, the respondents pointed to the existence of two additional factors that would influence the amount of submissions. Both of these relations seem to have a direct and an indirect effect. The variables are about the interaction of the firm with people that submit and about the role social media can play in the crowdsourcing process of an SME. Table 8 and 9 show the two additional critical success factors with the interview quotes that support their existence.
Table 8: Newly found critical success factor: Social media commitment and support

<table>
<thead>
<tr>
<th>Relation: Social media commitment &amp; support</th>
<th>Amount of submissions</th>
</tr>
</thead>
</table>

### Finding:

**I** Social media can be used as crowdsourcing platforms by SME’s. It is a very easy-to-access and cheap tool since most companies are already active on social media and can thus make use of an already existing community. Therefore no additional money has to be spend on the development of a crowdsourcing platform or on an intermediary crowdsourcing platform host. When social media is used as a platform to post a certain request on, it has a positive direct effect on the amount of submissions.

**II** Social media is considered the free publicity tool of today. Through one’s own social network an online request can spread to a large and unknown community. As such it helps SME’s to reach a large and undefined crowd and to get people acquainted with the request. Through acquaintance with the initiative a well maintained social media strategy can have a positive influence on the amount of submissions.

### Supporting quotes:

“Registration is often a problem for new platforms. Facebook could be a supporting platform for my game. Within three months this should be possible. I’ll have access to information about age and nationality through the Facebook-accounts. Then separate registration isn’t needed anymore. I will use the cheap word of mouth advertising of Facebook (…) When I started (UvA research red.) I hadn’t had all the large media attention. Social media was very important to build a crowd back then.” (Cerberus)

“The largest part of our marketing budget is spend at the resources we invest in social media. Especially Twitter, Facebook and blogs. We thus invest in content. (…) We try to attract people through playful actions on Facebook. (…) To build a community we have only used free publicity. Social media was a very important tool in this” (boodschapp)

“Ease of access is a critical success factor. Integration with existing social media is therefore key. We are trying to integrate our system in Facebook. People then do not have to register for our platform anymore. But this is not an ideal solution. When we look at it critically, I think Facebook is not suited for these kind of things. There should be something like an ideabook, and idea wall, a crowd of people that want to share ideas. (…) Until now, Facebook is the easiest to scale up. We use Twitter to reach expert people” (improgression)

“We made use of a commercial intermediary platform (Symbid red.). However, this was only useful to canalize all our existing contacts. To reach people, we still needed tools. Social media was very useful for this purpose. Facebook is the best to realize size. It offers visual effects.” (…) We also made a lot of use of blogs. We’ve send articles to 25 different popular technology blogs. However, you always should do this in combination with social media. People reading these blogs start searching for you, then you should make it easy to find you.” (LEEV Mobility)

“We mainly used Twitter. This was on the one hand because we needed experts, and Twitter is better suited to find those, on the other hand, it is easier to connect to unknown people through Twitter. Facebook and LinkedIn are based on one’s own private social network. Strangers will more often offer really critical feedback” (zowerktpensioen.nl)

“I don’t think social media is a good co-creation tool: It doesn’t offer the best means to set up a discussion. They are very useful for feedback though. But watch out that feedback of some people is not representing the opinion of the whole market.” (Webclusive)

“With Twitter it is very easy to find the appropriate people. We were searching for people in the region Soest-Baarn that were unemployed. With a few messages with the right hash tags we found 400 people in no time” (Dichtblij)
As one can see in table 8, an SME’s commitment and experience with social media usage can increase ultimate crowdsourcing success by two means. First, social media can be used as a crowdsourcing platform. During the interviews it became clear that ease of access is very critical. A self-developed platform is expected to be related with higher barriers to contribute. Cerberus and Improgession, for example, point to registration procedures of a self-developed platform as a large barrier. Potential solvers have to create an account before they can submit an idea or solution since the crowdsourcing firm usually wants to have access to data such as the solver’s age, sex, home town etc. By using existing social media as a crowdsourcing tool, one doesn’t have to create his own crowdsourcing platform with its associated barriers. For most of the popular social media websites, such as Facebook, Twitter, LinkedIn, solvers usually already have an account. In addition, using an existing and easy-to-access social media platform saves time and resources that otherwise would have been spent at the development of a platform. Furthermore, social media usually have perfect communication tools which are nicely suited to the purpose of a crowdsourcing initiative. A social media site as a crowdsourcing platform will thus keep the barriers to contribute low, resulting in a direct increase in the amount of submissions.

Second, social media can also contribute to the acquaintance of the crowd with your crowdsourcing initiative. By most interviewees social media is considered the perfect free publicity tool. People have to know about the initiative before they can contribute. Social media is an easy-to-use and cheap mean to increase the crowd’s acquaintance. Through these networks an ask for help can spread exponentially to a very large and undefined crowd. When more people get acquainted with the initiative, more people are likely to submit their ideas or solutions, resulting in an overall increase in the amount of submissions. So, besides a direct effect, social media commitment and support does also have an indirect effect through acquaintance with the initiative on the amount of submissions.

Another newly found critical success factor for crowdsourcing success in SME’s, i.e. pro-active crowd management, is also believed to affect ultimate crowdsourcing success through two mechanisms (see table 9, next page). First there is a direct effect. A pro-active attitude means continuously interacting with the crowd. This interaction stimulates the commencement of a discussion. When a discussion is started, people react on each other resulting in more posts and messages. The overall amount of submissions is then expected to increase. In addition, in a discussion people can collaborate or help each other which will also lead to more submissions.

Indirectly, the amount of submissions is stimulated by pro-active crowd management through intrinsic motivations. When people are really involved in the project and they get the feeling as if they are a part of the product offering or firm, they are more motivated to come up with a second idea or solution or contribute to a future crowdsourcing initiative. 7 out of 8 of the interviewees mention that it is very important to show a pro-active and collaborative attitude towards the crowd.

Table 10 on the next page summarizes in which cases the above described new variables, i.e. social media commitment and support and pro-active crowd management, were identified as factors that either influenced the amount of submissions directly or indirectly. An overview of all findings with regard to SME crowdsourcing critical success factors is presented in appendix B-IV.
Table 9: Newly found critical success factor: Pro-active crowd management

<table>
<thead>
<tr>
<th>Relation</th>
<th>Pro-active crowd management ➔ Amount of submissions</th>
</tr>
</thead>
</table>

Finding:

I  
Submissions in SME settings are typically in the form of a discussion. Participating in the discussion as manager of the SME will allure submitters to respond back again. Pro-active management of the crowd and facilitating the discussion will have a positive direct effect on the amount of submissions.

II  
Pro-active crowd management and a short response to submissions will increase the willingness of the crowd to submit a second idea or participate in future crowdsourcing initiatives. People have to get the impression that their help was needed and valuable. When they receive a little thank you, they are intrinsically motivated to continue their help or respond to initiatives in the future because they feel they have become a part of the product. Through intrinsic motivations an active and supporting attitude towards the crowd will have a positive influence on the amount of submissions.

Supporting quotes:

“Participation by the questioner is a critical success factor” (Brandsupply)

“Be active! When you see possibilities to show your idea to the world, use them. Speak to people, on conferences, on universities and online. It is so much easier when people know you.” (Cerberus)

An easy to access interface and being part of the conversation are real critical success factors. We want to involve the consumer as much as possible. It can never be enough. They have to feel as if they are co-producers. That’s one of the main drivers for them to participate. In the digital world it is about fulfilment of a need, does it work, and am I involved” (boodschapp)

“I think this is a new way of entrepreneurship. Creating cool stuff together. But then you always have to give the crowd something back. Let them feel as if they are co-producers” (Improgression)

“People should be willing to help, they have to grant you the success. A socially desirable innovation might therefore be more successful in a crowdsourcing strategy. And people should get the feeling that their help is needed. At the same time, they have to trust you that you are going to make it.” (LEEV Mobility)

“Personal interaction is a critical success factor. People have to get the feeling that their help is appreciated. Otherwise they will not help you the next time. Therefore it is crucial to deliver your promises as a questioner. Maintenance of the community is very important. It is hard to create it, so handle it carefully. You should also be active in your social media efforts. Being present isn’t enough. Pro-activity is key. The online world is about giving and taking.” (zowerktpensioen.nl)

“You have to handle the network you built carefully. Save names, addresses etc. And give them feedback. Give them the feeling that they were involved and that their help was valuable.” (Dichtblij)

Table 10: New identified relations per interview case

<table>
<thead>
<tr>
<th>Relation/Case</th>
<th>Case 1</th>
<th>Case 2</th>
<th>Case 3</th>
<th>Case 4</th>
<th>Case 5</th>
<th>Case 6</th>
<th>Case 7</th>
<th>Case 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social media - amount</td>
<td>+</td>
<td>+</td>
<td>n</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>n</td>
</tr>
<tr>
<td>Social media - acquaint.</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Proactive - amount</td>
<td>n</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>n</td>
<td>n</td>
</tr>
<tr>
<td>Proactive - intr. motiv.</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>n</td>
<td>n</td>
</tr>
</tbody>
</table>
4.3 Model redesign

In the previous section, SME-specific critical success factors of a crowdsourcing strategy were identified based on interview results. An overview of all findings can be found in Appendix B-IV. These findings have resulted in a multi-item conceptual framework that still should be tested quantitatively. Starting point for the construction of this model was the crowdsourcing critical success factor model by Walter and Back (2011). Based on differences in the relations when put in an SME setting, the initial model was adapted. As a result, two new factors were added that appear to be critical for the ultimate success of a crowdsourcing practice in SME’s. The developed model is depicted in figure 2. The definitions of all individual variables are presented in appendix B-III.

![Diagram of crowdsourcing success model](image)

Figure 2: Critical success factors of crowdsourcing success in small and medium-sized enterprises

When comparing the initial model of Walter and Back (2011) with the SME-specific adapted model, certain matters are remarkable. First, the absence of **duration** as a critical success factor in an SME setting can be considered distinctive. This absence might be explained by a difference in the type of crowdsourcing that was assessed by Walter and Back (2011) and the dominant type of crowdsourcing in the interviews of this study. Walter and Back (2011) gather their data on crowdsourcing initiatives via Atizo.com, one of the biggest online brainstorming platforms. This
A platform can be classified as an intermediary platform. These intermediary platforms usually work with predetermined and bounded durations in a contest-like setting. Interview results from Brandsupply, the intermediary platform of this study’s sample, confirm this. Brandsupply works with a duration and agree that this factor might be crucial to ultimate crowdsourcing success. Dependent on the type of crowdsourcing the company can have two strategies to interfere with the crowd: It can post a question and wait for a predetermined period of time for responses by the crowd, or the company starts a discussion with the crowd. In the ‘corporate initiative’-type of crowdsourcing, SME’s seem to do the latter whereas in the ‘intermediary platform’ type of crowdsourcing the first seems to be the more common strategy. The absence of duration as a critical success factor might thus be the result of the dominance of the ‘corporate initiative’ type of crowdsourcing in the sample of this study.

The same distinction between these two crowdsourcing types can be used to explain a second remarkable finding; the absence of rewards as a critical success factor for crowdsourcing in SME’s. The SME crowdsourcing initiatives of the ‘corporate initiative’-type mention to not use rewards as an incentive for the crowd to participate in the process. Rewards were only mentioned once as a last resort to attract people. SME’s usually tend to create incentive schemes based on intrinsic motivations. This might be the result of a lack of financial resources to actually pay-out a reward. For Brandsupply however, offering rewards is the norm. So, again, the type of crowdsourcing seems to determine whether a certain factor is a critical one or not.

Based on the above, it looks like the Walter and Back-model explains the workings of the ‘intermediary platform’-type of crowdsourcing and the newly presented model of this study explains the dynamics of the ‘corporate initiative’-type of crowdsourcing. As a result, one might conclude that the newly presented model explains the workings of the ‘corporate initiative’-type of crowdsourcing rather than the workings of crowdsourcing initiatives in smaller sized firms. But this is not a solid statement. The observation that SME crowdsourcing initiatives of the ‘intermediary platform’-type seem to confirm the Walter and Back (2011) model is deceptive. Intermediary platforms, like Brandsupply and Webclusive, only host crowdsourcing initiatives. The initiatives on their platforms are not their own. Instead, they usually host crowdsourcing initiatives of large firms and MNE’s. This explains why duration and rewards, which are absent as critical success factors in an SME-specific crowdsourcing strategy, are mentioned as crucial factors in the ‘intermediary platform’-type of crowdsourcing initiative. Crowdsourcing initiatives of the ‘corporate initiative’ type on the contrary, do reflect the SME’s own crowdsourcing initiative, and do therefore perfectly reflect what the real critical success factors of small and medium-sized enterprises are. The differences between the reference model and the newly presented model are thus accredited to the difference in size of the firms subjected, rather than to the type of crowdsourcing applied.

The interview results have also identified some previously unknown critical success factors of crowdsourcing success in SME’s. Primarily social media commitment and support and proactive crowd management deserve additional attention in further research. Especially because they appear to have a direct as well as an indirect effect on the amount of submissions. These
variables are discussed more elaborately in the design propositions of next section. Other variables of the newly introduced model are already discussed in previous literature.

Another noteworthy finding is that all changes made to the initial reference model to result in the SME-specific model, are only affecting the amount of submissions. Critical factors that determine the quality of submissions appear not to be dependent on firm size. The complexity and the answer type of the question are key in both SME and MNE settings. Once a certain amount of submitters is reached, it is generally expected that there will always be some submissions of sufficient quality. The challenge of a crowdsourcing strategy is, especially in SME’s, to reach this threshold.
5 Discussion

This section will conclude this study and discuss its contributions to both academia and managerial practice. It starts with a brief description of the main findings of this research. Then, the managerial implications following these findings are discussed. Subsequently the limitations of this study are reviewed. The section finishes with this study’s contributions to the academic literature and the avenues for further research.

5.1 Conclusions

Based on a dataset of 82 innovative, small or medium-sized start-ups, this study started with the observation that crowdsourcing isn’t applied regularly in these firms although it is expected to be a beneficial strategy to them. This is most likely the result of a lack of knowledge about the workings of crowdsourcing strategies in SME’s. In this study, 8 best practice case interviews were held with young start-ups that had mentioned to make use of this strategy. Findings from the interviews were rather unequivocal and have resulted in the development of a critical success factor model for SME crowdsourcing success (figure 2).

This study contributes to the small body of literature about open innovation practices in small and medium-sized enterprises. In addition, it is the first to focus on crowdsourcing strategies in such a setting. As a result, the research scope of the body of literature about crowdsourcing is extended to include SME’s, next to the available studies on MNE’s. And, in a more broader sense, this study argues that open innovation practices should be applied differently in SME’s compared to MNE’s.

Most important findings are the roles social media and a pro-active attitude towards the crowd play in the discussed cases. More than MNE’s, SME’s have to continuously stay in touch with the helpful crowd most often through new and free communication tools such as social media. The identification of factors critical to crowdsourcing success, has led to a first understanding of the workings of the strategy in SME’s. This will allow entrepreneurs and managers of innovative SME’s to apply crowdsourcing strategies in their own organizations, without facing insurmountable risks. This research thus might be able to positively influence the still limited percentage of 14% of SME’s that make use of crowdsourcing strategies and increase the innovation capacities of these firms. The next section discusses in more detail how the results can contribute to managerial practice.

5.2 Managerial implications

Although the findings haven’t been tested quantitatively yet - and therefore the size of each variable’s individual explanatory power is still unknown - these qualitative findings can already be used to determine do’s and don’ts when implementing a crowdsourcing strategy in small and medium-sized enterprises. In order to do so according to scientific design standards, the CIMO-logic is used, which is already introduced and discussed in section 3.5 and appendix C. This
5.2.1 Design propositions

Since the variables of the initial model are already discussed by Walter and Back (2011) and in earlier literature (e.g. Leimeister et al, 2009), the focus of this study’s design solution is on the newly introduced relations that ultimately result in crowdsourcing success in specifically SME’s. The role of social media and pro-active crowd management appears to be crucial for SME’s to successfully launch a crowdsourcing initiative. The interventions or measures that managers of SME’s can use to enhance these mechanisms, have to be discussed in order to be able to develop a blueprint towards crowdsourcing success.

Social media commitment and support is found to have a direct and an indirect effect on the amount of submissions. This variable thus influences through two mechanisms the ultimate success of a crowdsourcing initiative. First, it directly affects the amount of submissions because the firm can make use of an already existing (social media-) platform with low barriers to entry and an associated community. In addition, using an existing platform prevents the firm from spending money unnecessarily at the development of a platform. This reasoning results in the following design proposition:

\[ \text{DP}_1: \text{In order to increase the amount of submissions (O) in a crowdsourcing initiative of a small or medium-sized enterprise (C), use existing social media platforms for your crowdsourcing initiative (I) so that the barriers for participating remain low and you can make use of a community which is already present on that platform (M).} \]

Indirectly, a clear social media presence can increase the amount of submissions through acquaintance of people with the crowdsourcing initiative:

\[ \text{DP}_2: \text{In order to increase the amount of submissions (O) in a crowdsourcing initiative of a small or medium-sized enterprise (C), develop a careful online marketing strategy that results in clear social media presence (I) to get people acquainted with the crowdsourcing initiative (M).} \]

Also the behaviour of a firm towards the submitters appears to be important in an SME setting. Again, there is found a direct and an indirect effect on the amount of submissions. Through setting up and participating in a discussion, the amount of overall communication increases on the crowdsourcing platform. As submitters and firm apply in an on-going two-way discussion, the amount of submissions tends to increase.

\[ \text{DP}_3: \text{In order to increase the amount of submissions (O) in a crowdsourcing initiative of a small or medium-sized enterprise (C), setting up and participating in an online discussion (I), will increase the two-way, and as a result, overall communication (M).} \]
A pro-active attitude towards the crowd can also indirectly increase the amount of submissions because people might get more intrinsically motivated to post another solution, or post at a next crowdsourcing initiative. As discussed in the results and the theory sections of this report, the motivations of the crowd to participate in the initiative are very crucial to the ultimate success. This study found that people really want to feel as if they have become a part of the product.

*DP*: In order to increase the amount of submissions (O) in a crowdsourcing initiative of a small or medium-sized enterprise (C), give the people the feeling that their help and contribution was valuable (I), so that people are intrinsically motivated to respond later on, or at future crowdsourcing initiatives again (M).

### 5.2.2 Managerial blueprint

By combining earlier research, for example Walter and Back (2011); Huston and Sakkab (2006), with these design propositions, it is possible to develop an SME-specific blueprint towards the successful launch of a crowdsourcing initiative. Figure 3 combines the just proposed design solutions with design suggestions from earlier research. The numbers between the brackets after each action point to the critical success factor(s) that is/are influenced by that particular action. The legend depicts which numbers are associated with which critical success factors.

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**Figure 3**: Blueprint towards a successful launch of a crowdsourcing initiative in SME’s
The above blueprint offers measures to influence all of the 7 critical success factors that were identified in this study and presented in the model (figure 2). All measures with the numbers 3, 5, 6 and/or 7 between brackets are direct derivatives of the design propositions developed in the previous section. These are SME-specific actions that influence the direct and indirect influences of social media commitment and support and pro-active crowd management on the amount of submissions. Actions referring to the numbers 1, 2 and 4 are measures that were derived from earlier research (e.g. Huston & Sakkab, 2006).

As mentioned before, this study concludes that although the occurrence of crowdsourcing in SME’s is relatively low, its potential in SME contexts is generally perceived to be high. Managers of the SME’s that were questioned during the interviews unanimously were content with the results of their crowdsourcing initiatives, and most of them said to use comparable strategies the next time. The conclusion about the low occurrence on the one hand and the high familiarity with the concept plus the perceived high potential of a crowdsourcing strategy in SME’s on the other hand, seems paradoxical. But, as described in the introduction of this report, entrepreneurs and managers of SME’s face high uncertainties and risks because the understanding of the dynamics of crowdsourcing in SME settings is immature.

In that light, the development of design propositions and a blueprint towards successful implementation of a crowdsourcing strategy in SME’s, is considered a major contribution to management practice. Entrepreneurs and managers of SME’s now know which factors to pay attention to when they are planning to launch a crowdsourcing initiative. Results from the survey have revealed that although managers of SME’s are familiar with the concept of crowdsourcing and face difficulties in those phases where crowdsourcing could be a solution, they do not dare or do not know how to launch such an initiative and implement it in their organization. Especially for this group the critical success factor model and the blueprint towards the successful launch of a crowdsourcing initiative is very valuable.

5.3 Limitations

Naturally, the findings of this writing are subject to limitations. Given the maturity and size of the available literature, many more gaps could be identified. This report has focused on crowdsourcing from a corporate perspective in a business environment. Lots of research still has to be done in this research area. Now, one sometimes have to use working papers or articles that are not published yet. In order to be able to discuss crowdsourcing critical success factors, an unpublished article was used (i.e. Walter & Back, 2011). Assessment of the quality of this article had to be done differently. It turned out that the authors were working at a renowned university (University of St. Gallen, Switzerland, ranked 7th among Europe’s business schools) and most of their citations were from the same high-quality articles that were used in the theory part of this report. Based on this finding, the working paper was believed to present a study of sufficient quality.

Following the reasoning of Walter and Back (2011), a second concern with regard to the initial-, and adapted model is that they only reflect external factors. This study focused only on this type
of factors for the sake of generalization. Most external factors seem to be the same, independent of the internal differences between the companies. In addition, most internal factors (e.g. corporate culture, organizational structure) are in the start-ups of consideration in this study not yet solidly set. This study tried to find adaptable critical success factors that are the same for all SME’s. However, there could very well be internal factors that are critical to ultimate crowdsourcing success as well. When future research will quantitatively test the presented model, the model’s explanatory power might increase when some internal factors are taken into account as control variables.

With regard to our sample, two issues are of concern. First, this study addresses crowdsourcing in small and medium-sized enterprises, but all the questioned companies can be classified as small enterprises (1 - 99 employees). In the questionnaire sample however, there were some medium-sized enterprises (100 - 499 employees). One might argue that conclusions of this study are only applicable to small-sized firms and could not be generalized to medium-sized firms. This can be partly true, but the author of this study expects a continuum which reflects on the one end the measures a very small firm should take, and on the other hand those a MNE should take to successfully implement a crowdsourcing strategy. Medium-sized enterprises are expected to be more skewed to the small-sized end. They both do not have the appropriate brand strength to attract big crowds easily, nor do they have the resources to pay big rewards. Therefore the findings of this study will be applicable to most medium-sized firms too. But the distinctions made between SME’s on the one end and MNE’s on the other might thus be a little harsh. A medium-sized firm of 100 employees should obviously organize its crowdsourcing initiative different than a medium-sized firm with 495 employees.

A second concern of our interview sample is that it consists of companies that are almost all active in the same industry. 7 out of 8 questioned firms participated in the same industry contest during the Accenture Innovation Awards, namely the Communications, Media and (high-)Tech (CMT) industry. This industry is characterized by a high percentage of online service providers. This was reflected in our sample. Only LEEV Mobility was actually selling a tangible product. As a result of this, findings of this study might be influenced. Firms already active in communication and media are expected to already be very familiar with online and community activities. This study’s conclusion about the influence of social media commitment and support might therefore be slightly exaggerated. However, as the interview with LEEV Mobility is compared with the interviews of the other firms, no contradicting findings can be found. The relative over-representation of firms active in the CMT industry, seems not to be problematic.

5.4 Scholarly implications and avenues for further research

This study is the first to assess the crowdsourcing mechanism in an SME context. It has resulted in the identification of SME-specific external critical success factors. As mentioned before, the model’s overall explanatory power might increase when some internal factors are taken into account as control variables. But these internal critical success factors haven’t been examined for SME’s nor MNE’s yet, but might result in interesting findings too. The proposed model and resulting blueprint is expected to have nullified a lot of the uncertainties related to crowdsourcing.
in SME’s, but not all. Assessing the influence of internal variables as well might improve the proposed model even further.

A third avenue for further research might be the investigation of the role of the quality of submissions when the amount of submissions is high. A threshold in the amount of submissions was already hypothesized earlier in this section: Once a certain amount of submitters is reached, it is generally expected that there will always be some submissions of sufficient quality. This raises the question whether the critical success factors that determine the quality of submissions are still critical after such a threshold is reached.

Finally, more research is needed to increase the understanding of the newly introduced variables in the SME-specific model. Social media commitment and support and pro-active crowd management are both variables of which almost no articles exist in the crowdsourcing literature stream. Research at these topics might stimulate the research at 21st century online innovation. As mentioned before, literature that assesses the interface of social media and innovation is still scarce.
References

Articles


Denyer D., Tranfield D. & Aken J.E. van, (2008), *Developing design propositions through research synthesis*, Organization Studies, 2008; Vol.29; p.393

Franke N. & Shah S., (2003), *How communities support innovative activities: An exploration of assistance and sharing among end-users*, Research Policy, 32 (1)


Hippel E. von, (2009), *Democratizing innovation: the evolving phenomenon of user innovation*, International Journal of Innovation Science, Volume 1, Number 1 / March 2009


**Books**


Appendices

Appendix A: Questions and results of the online survey

Q1: What was the name of the innovative concept with which you participated in the Accenture Innovation Awards? (N = 87)

Q2: In the online subscription form of the Accenture Innovation Awards 2012 you mentioned to collaborate with customers/users. How do you involve these customers/users in your business processes? (multiple answers possible)
(N = 84, answering suggestions are based on Kaulio (1998))

Q3: Are you familiar with the concept of crowdsourcing? (N = 84)
Q4: Have you ever posted a business-related question on the internet? E.g. on social media, blogs, forums etc. (N = 83)

Q5: In which business processes do you currently involve the customer? (multiple answers possible) (N = 83)
Q6: In which phase(s) of the new product development process do you face difficulties for which users/consumers might be a good help? (multiple answers possible) (N = 82)

Q7: Do you think it’s hard to find the proper consumers/users that are rightly suited to help you with your problems?
(N = 82)
Appendix B-I: Classification of cases per crowdsourcing type

<table>
<thead>
<tr>
<th>Type of crowdsourcing</th>
<th>Description</th>
<th>Interviewed SME’s N=8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaborative communities</td>
<td>Peer production  A group of people pick up a task voluntarily and perform it collaboratively.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Public crowdsourcing  A certain organization posts an extensive task which could be split up in a large number of different small tasks. These small tasks are then performed by a large community</td>
<td>Cerberus game*</td>
</tr>
<tr>
<td>Competitive market for ideas</td>
<td>Creative co-creation A number of individuals from the community posts their own idea on a firm-hosted platform. Subsequently the community selects the best idea through a voting process</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Corporate initiatives  A company posts a problem or a challenge and people self-select to offer a solution. Questions and challenges might be posted on the firm’s own website or on a platform hosted by others. Intrinsic as well as extrinsic motivations may play a role in participation incentives.</td>
<td>Impression.nl, LEEV Mobility, zowerktpensioen.nl, Dichtblij, Boodschapp, webclusive.nl</td>
</tr>
<tr>
<td></td>
<td>Intermediary platforms  Firms post problems and challenges on a platform not owned by the firm itself. Expert subscribers are asked to come up with solutions. Posted solutions are not visible to others. The best idea wins a prize.</td>
<td>Brandsupply.nl</td>
</tr>
</tbody>
</table>

*: Although Cerberus game is almost similar to initiatives as NASA Clickworkers and Galaxy ZOO, Cerberus is the first to commercially benefit from this type of crowdsourcing by adding a (serious) gaming element which allows to earn money through mini-transactions. As such, Cerberus game can be considered a hybrid form of crowdsourcing containing elements from public crowdsourcing and corporate initiatives.
## Appendix B-II: Unchanged relations

### Relation: Specificity ➔ Amount of submissions & Quality of submissions

**Finding:**

In an SME setting, specificity seems to have the same influence on crowdsourcing success as in an MNE setting. The more complex a task is, the smaller the amount of submissions and the lower the average quality of the submissions.

**Supporting quotes:**

“I train people to obtain the right skills through a serious game. After finishing this game, everybody is able to map at a sufficient skill level. However, I see big differences in the time people need to finish the training scheme. Some people finish in one hour, others don’t. The latter more often give up. And I lose those people for my platform”

(Cerberus)

“The more complex or specific a question is, the harder it is to find the right people”

(zowerktpensioen.nl)

### Relation: Answer type ➔ Quality of submissions

**Finding:**

Type of answering seem to have the same effect on the quality of submissions in an SME setting as in an MNE setting. All respondents use crowdsourcing practices in the idea generation and/or concept design phases. Questions are usually very diverse. Most respondents seem especially content with the idea-type answers of the crowd. Sometimes an open question is too broad and has to be rephrased.

**Supporting quotes:**

“We continuously assess for whom this is a solution, and what is the business model. We validate that with our users. This is done through a diverse set of methods, varying from qualitative research, quantitative research, interviews, surveys, building of landing pages, designs, and ideas.”

“Sometime we have to rephrase our question. The submissions then suggest that we have to phrase the question a little different” (boodschapp)

“Answers we ask for are really diverse. And all are optional questions. Open questions appear to be harder to fill in.” (improgression)

“questions we ask the community to answer are very diverse: usability, legislations, and technical features like range and weight.” (LEEV Mobility)
### Appendix B-III: Definitions of critical success factors.

<table>
<thead>
<tr>
<th>Critical success factor</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Answer type</td>
<td>Suggested answer types categories: naming, designing, engineering, or business solution.*</td>
</tr>
<tr>
<td>Specificity</td>
<td>Subjective measure of the required skill level, necessary to submit an idea or solution to the challenge.*</td>
</tr>
<tr>
<td>Social media commitment &amp; support</td>
<td>Combination of the degree to which the organization is committed to use social media and the level of existing social media activity.</td>
</tr>
<tr>
<td>Brand strength</td>
<td>Subjective measure of the brand-strength of the firm that poses the question/challenge.*</td>
</tr>
<tr>
<td>Acquaintance with the initiative</td>
<td>The degree to which people are aware that the initiative exists.</td>
</tr>
<tr>
<td>Intrinsic motivations</td>
<td>Motivations of an individual in the crowd to act for the fun or challenge entailed rather than for external pressures or rewards.*</td>
</tr>
<tr>
<td>Pro-active crowd management</td>
<td>The degree of the pro-active attitude an organization possesses towards the people that participate in the initiative.</td>
</tr>
</tbody>
</table>

* definitions retrieved from Walter and Back (2011)
## Appendix B-IV: Overview of all findings

<table>
<thead>
<tr>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>In an SME setting, <strong>specificity</strong> seems to have the same influence on crowdsourcing success as in an MNE setting. The more complex a task is, the smaller the amount of submissions and the lower the average quality of the submissions.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of answering</th>
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</thead>
<tbody>
<tr>
<td>seem to have the same effect on the quality of submissions in an SME setting as in an MNE setting. All respondents use crowdsourcing practices in the idea generation and/or concept design phases. Questions are usually very diverse. Most respondents seem especially content with the idea-type answers of the crowd. Sometimes an open question is too broad and has to be rephrased.</td>
</tr>
</tbody>
</table>

| In an SME setting, **brand strength** seems to have only an indirect effect on the amount of submissions. It’s more about a product/firm’s visibility and familiarity in the market place. People have to get introduced with the product or firm before they are able to help. The strength of the brand plays a role in this, but there are also other ways to get people acquainted with a firm or offering. |

| In an SME setting, **rewards** seem to play a less important role. Where in an MNE setting extrinsic motivations, such as rewards, appear to be the main drivers to participate (Walter & Back, 2011), for SME’s it is more about intrinsic motivations. Still rewards could play a role, but managers of SME’s do not have the appropriate resources and try other options to motivate people to participate. |

| In an SME setting, **duration** seems not to be a critical success factor. Posted questions often result in an on-going discussion which does not have a pre-set closing date. When there are monetary or other extrinsic rewards involved, the crowd tends to post more solutions as a pre-set closing date comes closer. When no rewards are offered, which is typically the case in SME settings, duration seems not to have an influence and increases or decreases in the number of reactions are determined by other factors. |

| Whereas in an MNE setting monetary/financial rewards appear to be to most important driver for people to participate in a crowdsourcing initiative, in an SME setting it is more about **intrinsic motivations**. Rewards might only serve as a last resort. |

| Where it seems easy for large organizations to generate enough ‘traffic’ to their online contests, SME’s have to put a lot of effort to let people know that there is a request for help. People first have to know that a certain product exists and that the start-up might need help (**acquainted with the initiative**), before they can actually help it. |

| **Social media** can be used as crowdsourcing platforms by SME’s. It is a very useful and cheap tool since most companies are already active on social media and can thus make use of an already existing community. Therefore no additional money has to be spend |
on the development of a crowdsourcing platform or on an intermediary crowdsourcing platform host. When social media is used as a platform to post a certain request on, it has a positive direct effect on the amount of submissions.

Social media is considered the free publicity tool of today. Through one’s own social network an online request can spread to a large and unknown community. As such it helps SME’s to reach a large and undefined crowd and to get people acquainted with the request. Through acquaintance with the initiative a well maintained social media strategy can have a positive influence on the amount of submissions.

Submissions in SME settings are typically in the form of a discussion. Participating in the discussion as manager of the SME will allure submitters to respond back again. Pro-active management of the crowd and facilitating the discussion will have a positive direct effect on the amount of submissions.

Pro-active crowd management and a short response to submissions will increase the willingness of the crowd to submit a second idea or participate in future crowdsourcing initiatives. People have to get the impression that their help was needed and valuable. When they receive a little thank you, they are intrinsically motivated to continue their help or respond to initiatives in the future because they feel they have become a part of the product. Through intrinsic motivations an active and supporting attitude towards the crowd will have a positive influence on the amount of submissions.
## Appendix C: Developing design propositions through research synthesis

(adapted from Denyer et al., 2008)

<table>
<thead>
<tr>
<th>Component</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Context (C)</td>
<td>The surrounding (external and internal environment) factors and the nature of the human actors that influence behavioural change. They include features such as experience, organizational politics and power, the nature of the technical system, organizational stability, uncertainty and system interdependencies.</td>
</tr>
<tr>
<td>Interventions (I)</td>
<td>The interventions managers have at their disposal to influence behaviour. It is important to note that it is necessary to examine not just the nature of the intervention, but also how it is implemented. Interventions carry with them hypotheses.</td>
</tr>
<tr>
<td>Mechanisms (M)</td>
<td>The mechanism that in a certain context is triggered by the intervention.</td>
</tr>
<tr>
<td>Outcome (O)</td>
<td>The outcome of the intervention in its various aspects, such as performance improvement, cost reduction or low error rates.</td>
</tr>
</tbody>
</table>