



MSc in Business Administration

**HOW IS THE IMPLEMENTATION OF
CROWDSOURCING LINKED TO STRATEGY IN THE
ORGANIZATION?**

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ABSTRACT

How is the implementation of crowdsourcing linked to strategy in the organization?

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This study analyzes the relationship between the implementation of crowdsourcing initiatives and the organizational impact they have, particularly with respect to the alignment with the strategic interests of the organization. Three companies implementing internal crowdsourcing initiatives participated in this study, providing primary data to support this analysis.

After the careful review of the existing literature, a survey tool was developed based on Prof Andrei Villarroel's Corporate Crowdsourcing Assessment Framework, and in collaboration with the participating companies. Finally, the instrument was administered to a sample of executives in the companies, collaborating with us in this research.

Our results indicate that the company's board of directors plays a key role in the diffusion and involvement of employees in internal crowdsourcing initiatives. However, the board involvement, per se, is not enough for a successful crowdsourcing implementation. The alignment between the initiative goals, the management and organization practices reveals crucial to the success of the implementation.

Additionally, we found that technology does not ensure the internal diffusion of a crowdsourcing initiative. Indeed, the diffusion efforts should be taking into consideration the company's human resources structure and the sector where it operates. These two dimensions should make companies customize their communication to meet the purpose of successfully engaging employees.

Finally, we found that companies that interact frequently with external stakeholders in their core business do not have the same level of openness with them in the crowdsourcing initiative. This means that crowdsourcing is not used, at least in a first phase, as a means to involve external stakeholders for innovation purposes.

We expect our findings to be a useful contribution to the organization and innovation management literatures, as well as to provide insights for companies that already have or are planning to implement an internal crowdsourcing initiative.

Key Words: Crowdsourcing Initiative; Strategy; Implementation; Alignment; Technology

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PREFACE

An Innovation Management course and a Consulting Project gave me the first contact with the crowdsourcing concept. In the course conducted by Prof. Andrei Villarroel, I learned what crowdsourcing is, through the access to relevant academic literature as well as some concrete cases. A Consulting Project course, taught by Prof. Céline Abecassis-Moedas, made me deepen into business environment and help a company to meet his purpose: contact with stakeholders all over the world.

After this experience and a semester abroad, I contacted Prof. Villarroel to develop my dissertation about the crowdsourcing topic.

The attractiveness of this project to me is sustained in the experience that was contacting and interviewing companies, and keep them interested and motivated to participate in this study. Despite all the difficulties considering the time constraints from the companies' side, this experience was really rewarding.

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Any errors or omissions that this thesis might contain remain of my own responsibility.

I. Introduction

I.1 Research Overview

This study focuses on companies that had implemented, and are still running, a collective initiative for the purpose of innovation. This type of collective initiatives are called “Crowdsourcing” (Howe, 2006), and more specifically, in the context of large firms, “corporate crowdsourcing” initiative (Villarroel and Reis, 2010), an endeavour of the firm where all employees – across different business units, and non-employees - external to the firm, are involved in the company’s innovation process by submitting ideas, comments or solving challenges/assignments.

The implementation of corporate crowdsourcing initiatives differs from company to company (Chesbrough, 2003). On one hand, initiatives depend on a variety of technological tools, like a computer with dedicated software, or a traditional suggestion box where people can put their ideas, etc. On the other hand, different firms using the same technological tool, differ in the way they organize around their specific implementation of the initiative in terms of the processes used, the organizational structure changes, and the strategic importance of the initiative in the eyes of the company’s top leadership. This latter is the focus of this dissertation. The work presented here sought to measure the importance of each of these organizational aspects using a framework developed by Villarroel (2011) for this purpose.

Each of the cases analyzed in this dissertation implements a crowdsourcing initiative for innovation, supported by the same dedicated software, provided by a specific vendor. Internally, each company has the choice to use, or not, different software modules. The common software modules, and the adopted by the companies analyzed, were an “Idea Market” (IM) and an “Idea Forum” (IF). Both modules could be customized to the customer’s requirements.

In the IM, all employees can submit ideas, invest and comment on ideas developed by themselves, or by other stakeholders. The dynamic is very similar to a financial market but instead of raising money, companies want to obtain new ideas, involving more than the employees assigned to do the formal research and development (R&D) (Jeppessen and Lakhani, 2009). On the IF people can submit their ideas and receive feedback from others participants and from the managers.

In this research, we are looking for answers to the question: “How is the implementation of crowdsourcing linked to strategy in the organization?”. With this research question we want to understand how the implementation of the crowdsourcing initiative in a large multi-business firm reflects and meets the goals of the strategic direction pursued by the top-level management.

In order to explore the research question, we used the framework defined by Villarroel (2011), as a guide: (1) to gather primary data about the company’s goals, their objectives with the initiative and how it operates, through meetings with the company’s board members and

other directors; and (2) to devise a survey instrument to administer to the company's employees who have responsibilities related to the initiative. Concurrent with this effort, we gathered secondary data from previous studies and publicly available information of the companies analyzed and we searched for relevant academic literature.

Understanding the organizational factors related to the implementation of corporate crowdsourcing initiatives of innovation, should provide insights about how companies make adjustments to the ways in which they operate to maximize their effectiveness. Insights from this work should also be helpful for companies that would like to implement an initiative of this type, helping them to understand key variables for crowdsourcing implementation.

I.2) Research Propositions

To meet the purpose of this study we created a survey instrument that allows measuring crowdsourcing implementation and, at the same, allows comparing companies from different business sectors. After measuring the implementation, it is possible to analyze how it fits with the crowdsourcing strategy. Four key dimensions compose this survey: strategy, organizational, process and technology, trying to cover the main areas since the decision making process of starting a crowdsourcing initiative to the management and maintenance of the initiative.

From the dimensions that are presented in the survey, it is possible to associate two of them to the crowdsourcing strategy. Strategic dimension comprehends the goals with the initiative as well as their management. On the organizational dimension are included topics like the initiative incentives or the number of resources allocated. For this reason, both dimensions are interrelated, with some topics on the organizational dimension being result of strategic dimension decisions.

On the opposite side we have the experience in the field with crowdsourcing implementation, which includes the process and technological dimensions. Since the process dimension involves company operations practices and the technological dimension comprehends technology related topics, both could be consider the result of the defined crowdsourcing strategy. Attending to the complexity of the research, we decide to create some research propositions in order to be able to define which the main drivers for implementation are.

Proposition P1: Organization and Strategic dimensions alignment makes the implementation more effective

The decision of implement a crowdsourcing initiative could be allocated to two of the dimensions analyzed. This proposition sustains that when the organization and strategic dimensions are aligned, meaning that the scores in both dimensions are closer to each other, the

implementation is more effective. The effectiveness of the implementation is measured by the simple average of the process and technological dimensions.

Proposition P2: The availability of the technology is not critical for initiative diffusion among employees

Jeppesen & Lakhani (2009) explained the effectiveness of a broadcast search to solve specific problems to generate innovative ideas, revealing the concept of marginality. Under this scenario, proposition P2 promotes the idea that is necessary some technological conditions to be able to involve some employees that could be in the margin. However those conditions are not a requirement for employees' involvement, depending of factors such as the sector where the company operates or their human resources structure.

Proposition P3: The involvement of external stakeholders on operations is not followed by a crowdsourcing initiative participation

This proposition is focused on the relation between companies and external stakeholders. P3 states that a company that interacts with external non-employees in their core activity could not adopt the same level of openness in a crowdsourcing initiative. As Alexy and Henkel (2010) had described, an involvement in this type of innovations asks for new procedures and strategies. This propositions reinforces that a crowdsourcing initiative not only ask for "new learning routines", but also change the way as companies interacts with some of their stakeholders.

II) Literature Review

Before deepening into the analysis, it is important to review the previous literature: firstly to understand what is Open Innovation and how it becomes relevant to business management literature; and secondly to understand the impact that this new innovation model has either on organizations and communities.

II. 1) Innovation boundaries: from closed to open

In 1945, Hayek gave the first insights on the idea, saying that knowledge is dispersed across the society and highlighting the "need for a process by which knowledge is constantly communicated and acquired", but for which centralization was not the solution. In his opinion, decentralization is the way "to ensure that the knowledge of the particular circumstances of time and place will be promptly used". This theory was brand new at the time, but later on was supported by Von Hippel's (1994) studies. Those studies suggest that in some industries, the

source of innovation could be out of the company boundaries, appealing to the “sticky” characteristic of knowledge: costly and difficult to transfer between different locations.

The difficulties mentioned by Von Hippel (1994) were justified by the “mobility of the workforce” (Chesbrough, 2003) that makes more “difficult for firms to appropriate and control their R&D” (Laursen & Salter, 2005).

Under this scenario, Chesbrough (2003) considered that we are assisting to a change in companies paradigms of innovation, forgetting the “self-reliance” where R&D employees were the only able to create, and changing to a new concept, Open Innovation, where a company can have access to ideas from people outside of their current business. On Chesbrough opinion, stakeholders like the customers, suppliers and even employers could help be the creators of ideas.

Being responsible employers or, at least, taking part in the production/conception of the product/service, the truth is that they could also be considered an asset in knowledge generation. The concept of “Peer production” appears as a solution with “systematic advantage over markets and firms” (Benkler, 2002) based on the employers’ interaction and participation. This advantage is sustained over their cost-effective but also on the ability to understand where the human creativity and their allocation to a specific job are.

In order to create a sustainable competitive advantage, companies should consider a resource-based view approach (Wernerfelt, 1984), focusing on resources, knowledge in this case, developed internally and truly difficult to replicate (Pisano & Shuen, 1997; Argote & Ingram, 2000). If this knowledge is difficult to capture because of their “appropriability regime” (Pisano, 2006), companies need to answer that. As result, the “complementary assets” (Pisano, 2006; Dahlander & Wallin, 2006), that allow companies to capture the returns from their innovations, appear as a solution but that still face the challenge of the limits to the protection of intellectual property (IP) (Teece, 1986; Pisano 2006) and some strategic issues associated to IP.

In spite of being a trend with an increasingly awareness, the truth is that open innovation is not applicable to all the industries (Chesbrough, 2003), but since this change has impact on the way companies protect their innovation, the locus moves through a higher vertical integration (Pisano, 2006).

II.2) Companies and the new innovation model

Schumpeter (1942) was the first to highlight the fact that interaction could promote innovation, recycling old ideas in different ways. The Open Innovation model is fundamental on this interaction with all the stakeholders (final users, employers or suppliers), being a potential solution to the lack of effectiveness of internal R&D expenditures (Chesbrough, 2003). Von

Hippel (1998) reinforces the idea, suggesting that many innovations came from users, which “produced more original ideas than professional developers did” (Magnusson, 2003).

Despite the benefits of a higher degree of “openness”¹ (Laursen & Salter, 2005), the truth is that the effort and the resources allocated to this movement should be analysed carefully, considering that the innovative performance related to the level of openness, would be a curve with an inverted U-Shape (Laursen & Salter, 2005), which means that after a tipping point the level of openness affects negatively the performance. This fact could be justified with the situation where “many fewer [companies] are comfortable being transparent about internal issues and problems that need to be resolved” (Lakhani & Panetta, 2007).

But if it is true that companies have to balance their openness, it is also true that we have in the society, cases of companies where openness is a key to their business model, mixing an open innovation model with the use of internet, creating “new forms of collective intelligence”² (Malone et al, 2010). Google or Wikipedia are the most well known cases, being a considerable part of their business sustained on electronic crowd participation. Wikipedia, for example, is based on contributors’ motivation and their collaborative actions (Nov, 2007).

These are examples of a concept developed by Howe (2006) called “crowdsourcing”, the use of “brainpower outside the company”, as a solution to “create content, solve problems, even do corporate R&D”.

The use of crowdsourcing is reinforced by the idea that people with more distance field (“marginality”) have a higher probability of generating successful innovations to the “broadcast search” problem solving made by the companies, being the “unexpected individuals” able to develop successful solutions to companies problems. (Jeppessen & Lakhani, 2009). A company can define their “crowd” as their employees (internal) or as the people that are out of the company (external).

One of the well-known cases of external crowdsourcing is Procter & Gamble (P&G), where open innovation is part of their strategy, representing “more than 35% of company’s innovations” (Huston & Sakkab, 2006). More than that, P&G have specific goals for their sources of innovation generation, having established that 50% should be acquired from outside of the company (Huston & Sakkab, 2006).

II.3) Companies and participants

As presented previously, open innovation is something that companies are willing to adopt. However, these types of decisions cannot be “managed in the traditional sense” (Lakhani &

¹ Openness, by Laursen & Salter, is associated to the external search breadth (number of external sources) and depth (extent of external sources)

² Collective intelligence is defined as *groups of individuals doing things collectively that seem intelligent* (Malone et al, 2010)

Panetta, 2007). Indeed companies need to create mechanisms that allow them to integrate all the contributions, which involve the existence of some level of authority (O'Mahony & Ferraro, 2007). Nonetheless, this level of authority should be balanced, since many times the "projects are distinctive" and integrated by "a community of volunteers [...] and developers instead of paying managers and employees" (Shah, 2006).

Although it is important to reflect on this increasing boundaries permeability with internal R&D, having the company to "build capabilities" (Alexy & Henkel, 2010) to have benefit from an R&D department and external input.

Related to that, Murray and O'Mahony (2007) assured that was necessary to consider three dimensions to "innovate cumulatively"³: disclosure, access and rewards.

Disclosure appeals to the need of making available former knowledge, while access is related to the understanding of that knowledge and their inputs.

Rewards are important to provide motivation, where could be either "remunerative" (Murray & O'Mahony, 2007) or/and "reciprocal".

This last point leads to the question, what do motivate participants? According to Amabile et al (1994) it is possible to distinguish two types of motivational factors: intrinsic and extrinsic. Intrinsic motivations are connected with internal stimulus, appealing to feelings as challenge or enjoyment. On the other way, extrinsic motivations are connected to external stimulus that provokes motivational reactions like financial compensation or recognition.

If it is important to companies to understand what motivates potential participants and it is also relevant to understand the best way to involve them. To increase the quality of the involvement is important to guarantee that a project meets "modularity", "granularity" and a low "cost of integration" (Benkler, 2002). With this we mean that each project should be divided into smaller parts (granularity) that could be worked independently (modularity) and could give a higher autonomy and consume low resources. At the same time it should be possible to be integrated in a final project, just by making a sum-up of all the modules (low cost of integration). Focusing back on OSS, the amount of granularity and diversity has significant impact in the range of opportunities to contribute (Lakhani & Panetta, 2007) but should be carefully managed to ensure that open source generate a gain (Kogut & Metiu, 2001).

For example, in Innocentive⁴ companies asked for "solvers" to solve specific issues but with limited resources since problems "are not of infinite scope" (Lakhani & Panetta, 2007). Indeed,

³ Innovate in a cumulative way takes place when are considered former sources of knowledge, and where that knowledge is used as input to innovate

⁴ Innocentive was founded in 2001 and operates in the "open innovation" business, where companies could post their challenges everybody. The well-succeeded participations receives a monetary award

are even very limited to allow “solvers” to make a self-selection in a broadcast search (Jepessen & Lakhani, 2009)

II.4) Companies and governance models

As mentioned before, companies should interact and consider participants involvement. However, is crucial the existence of general rule for communities where that kind of participants are enrolled in. Alexy and Henkel (2010) highlight that “opening up the boundaries of a firm necessitates the change of various internal aspect of the R&D process”, calling the concept of absorptive capacity⁵. This means that a company, which adopts an open innovation model, needs to gain “new learning routines” (Alexy & Henkel, 2010) as well as to rethink the way internal R&D is performed. Only after that, and when the organization is willing to do the tasks in a different way, a company could be able to improve “its production and absorption of knowledge” (Alexy & Henkel, 2010).

Besides that, it is important to take a look at the literature related to OSS governance management. The literature about this topic is calling for the need of some authority to “coordinate interdependent member activities” (O’Mahony & Ferraro, 2007). That position of authority cannot be justified only by technical attributes and contribution because this is not considered the only way to measure merit. The bottom line however, is that meritocracy is an organization where the competence is more important than the technical know-how (O’Mahony & Ferraro, 2007). These decisions are even more important when it is known that the governance structure impacts on the level of participation from the crowd (Shah, 2006), which at last is the goal of crowdsourcing.

II.5) Survey - research and method

Survey is defined as a way to explain a population, since “it counts and describes what is out there” (Sapsford, 2007). That description appeals to one of the main characteristics of a survey: obtain information with the purpose of construct quantitative measures (Groves et al, 2009).

Common to all surveys is the need of sampling, a process where the goal is to get “a group to survey”, having characteristics that allow a “generalization [...] about the population in the basis of the sample” (Sapsford, 2007).

Survey application varies but one of the most well known is the survey research, one of the most important areas in applied social research (Trochim & Donnelly, 2008), where a survey is the tool used to generate inputs for the research, being applied to a defined sample.

⁵ Absorptive capacity is the process that allow company to acquire external knowledge, retain and store it with the current organizational practices

Considering surveys, it is possible to divide them in two categories: the questionnaires and the interviews. The difference between both categories is who answers the survey. In a questionnaire is the respondent that completes it, while in the interview category is the interviewer, based on the respondent answers. (Trochim & Donnelly, 2008)

Based on the same authors, inside questionnaire category are included mail surveys, group-administered questionnaires and e-surveys (email surveys and Web surveys); the interview category comprehends personal interviews, focus group and telephone interview.

The decision of which survey type is it to be used is made based on “the nature of the questions”, being the use of an interviewer more appropriate when exists “complex, numerous and exacting” questions or “to follow-up on some aspects of attitude or behaviour”. (Sapsford, 2007)

Going deeper in the survey analysis and using again Trochim and Donnelly as references, it is still possible to divide survey questions in two broad types: *unstructured* and *structured*. In *unstructured* question type are included the entire “write down text” varying from “short comment boxes to the transcript of an interview” (Trochim & Donnelly, 2008).

The *structured* questions are easier for the respondent and for the researcher since they help to “accumulate and summarize responses more efficiently”. However, these questions limit the understanding of respondent ideas because the response format is not predetermined (Trochim & Donnelly, 2008).

According to Floyd J. Fowler (1995), the survey research goals “can be better achieved” when the respondents have to choose among a set of options or even rank it. Since *structured* questions are a “response format that is determined prior to administration” (Trochim & Donnelly, 2008) there are plenty of structured questions.

Dichotomous response formats (questions with just two possible responses, “Yes/No” or “True/False”) or questions *based on level of measurement* (respondents has a number beside each choice) are two of the most used types of *structured* questions.

Unstructured type is useful for cases where the possible answers are “numerous and diverse” or even to understand “the reasoning behind a conclusion, a behaviour or a preference”, that in other conditions will be much more difficult to learn about it (Floyd J. Fowler, 1995)

Even though all the best practices associated to survey methodology, there are some drawbacks associated and that are impossible to avoid. One of the most well known is the possibility of respondents’ answers on a socially desirable basis. This socially desirable responding “refers to the tendency of survey respondents present themselves in a favourable light”, being reluctant about revealing information about their attitudes or preferences (Groves et al, 2009)

III. Empirical Settings

III.1) Empirical Context

In this study, we analyzed the concrete cases of four companies that operate in different economic sectors and in different territories with the intention of designing a survey instrument. The only thing that the companies have in common is the existence of a crowdsourcing initiative.

But as Howe (2006) had defined, the crowd is not limited to employees but includes also the “brainpower outside the company”.

From the company’s point of view, is necessary to build mechanisms that allow them to contact and to interact with both communities: employees and external-non-employees.

The main tools that the companies’ use could be segmented based on the level of technology, between technological and non-technological.

Technological tools include all the initiatives supported through technology. The most well known case is the IM and IF. Both tools are supported through dedicated software, provided by a supplier of this technology.

However, exist other technologies more linked to the web like social networks, blogs, Wiki’s or Twitter-like, that could help companies to obtain inputs and ideas from internal and external parties.

In conclusion, inside the technological tools is possible to distinguish the ones supported through a dedicated software and the others supported by via-web.

In other dimension, is still possible to distinguishing three other tools that support interaction for innovation: telephone, e-mail and fax. Per se, these are not tools for innovation since they were not created for that. However in the innovation context, they could work as vehicle to allow the communication between two or more parts to share ideas.

On the opposite side we have the tools that do not require any technological support. A good example could be the suggestion box, where people could write ideas or make suggestions. The concept is similar to the idea forum; the difference is associated to the interaction and feedback as well as the technology that supports each of them.

Every moment of interaction between persons or a group is an opportunity to create new ideas, reason why workshops or brainstorm sessions could be considered a moment for idea generation.

All the tools are summarized in the following table:

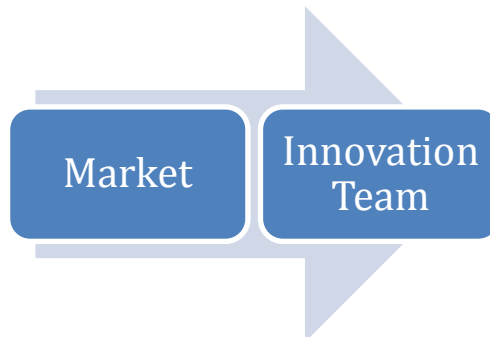
| Tool | Support | Orientation |
|-------------------------------|----------|---------------|
| Ideas Market | Software | Crowdsourcing |
| Ideas forum | Software | Crowdsourcing |
| Social Network, Blogs | Internet | General |
| Wiki's; Twitter-like | Internet | General |
| Workshop; Brainstorm Sessions | People | General |
| Suggestion Box | People | Crowdsourcing |
| Telephone, Fax, E-mail | - | General |

Table 1- Crowdsourcing Tools

From the analyzed cases, just three of them run the survey instrument, having two of them an IM and the other an IF.

III.1.1) Ideas Market

In the IM, people can participate in innovation through a dynamic that is very similar to a financial market, where by submitting ideas and comments, people are investing with an imaginary monetary unit. Here, investments are as important as the beliefs of the participants. The investments are made based on the faith that the market will approve the ideas and that they will pass to a next step (see Graph 1).



Graph 1- Ideas Market workflow

In a first moment the idea went to the market, subdued by the participants. The submission could be made by answering to a specific challenge (launched by the company, with a broader theme but at the same time restricted to a specific domain to avoid a lack of focus) or spontaneously. Those challenges could be something specific and available for some weeks or a permanent topic.

For each successful investment or approved idea, the investor or idea generator receives a predefined amount to award their participation and their performance. Each company has a catalogue with products and services, which could be exchanged by a specific amount of

monetary units. The catalogue includes mobile phones, trips or fridges. The types of products/services available are adapted to the country and employees preferences.

After being on the market, there is a second moment where the best ideas go to the next step and are evaluated. The ideas approved for analysis are the ones with the higher investments but limited to a specific number previously defined. The approval reflects the faith of the market's participants in the idea. The decision to implement or not the idea is made by a team or a committee, depending on the company, where the managers of the products/services of the company, the innovation managers and, in some cases, the members of the board of directors are included as members of the teams or committees.

The focus in this phase is understood by how viable the ideas are, not only in financial terms but also in the market. When completed this stage, the ideas were implemented. The responsible for the implementation could vary according to the companies, from the managers that are directly linked with the idea to a specific Innovation Team. The role of the idea's winner could be also more active in implementation, depending on the company. Moreover, the creators of the ideas implemented receive an extra amount of monetary units.

Because the number of ideas submitted and the ones implemented are drastically different, some companies create a secondary IM. This market tries to recycle ideas that did not were approved before, neither by the Innovation team nor by the market, having their own workflow

III.1.2) Ideas Forum

In the IF, employees could submit ideas voluntarily. Those ideas could be inserted in a specific theme or be something more general. An important characteristic of this tool is the possibility of all the participants to give feedback and to comment each idea posted. People could also rank or give scores (Example: use a rating 1-5 stars) to the ideas available.

The traditional workflow of an IF is similar to an IM. The ideas defined in the forum as the most interesting and with higher potential are analyzed by a group of directors or managers. However it could exist an employee that filter the ideas more commented and ranked. The aim of this job position is avoid to discuss ideas that were already implemented or that have low quality.

III.2) Companies participants

III.2.1) Company A

This company operates in the telecommunication sector and had launched their crowdsourcing initiative during the year of 2009 with an IM. Having more than 10.000 employees, this company has a broader range of potential participants among their employees.

However, from all the employees just 30% of them have access to a computer and Internet on a daily basis.

The crowdsourcing in Company A has two different workflows: one for the IM in a traditional sense; and another for a “recycled” IM that uses ideas that was not approved before. The department that is responsible for the crowdsourcing manages both the crowdsourcing initiatives.

III.2.2) Company B

Company B is an important player in her country, operating in the utility business, having about 3500 employees⁶.

The strategy for crowdsourcing of the Company B group is to split the crowdsourcing according to the sources of innovation. Company B is part of an international group with the headquarters (HQ) in other country that not the one where Company B operates. The holding where is inserted Company B, is trying to centralize the innovation process, having a dedicated company focus on Innovation. In addition to that, they have also a dedicated web site, oriented to external non-employees. The website is described as a place where anyone that “has a creative and innovative idea, whether concerning a new technology or a business proposal” could participate through the website that is “open to everyone”⁷, being possible to interact with all the community.

Focusing on Company B, it had started an internally crowdsourcing initiative in 2009, creating an IM. This market has a challenge that has a very specific topic that is renewed all 6/7 weeks.

Their vision highlights the desire to be a global leader in a sector that operates but also leader in innovation. That vision is supported by the company values, being innovation a key word and described as a way to create value in all the business where the company operates.

III.2.3) Company C

Company C is in the retail business, which justify the number of employees: more than 40.000. Based on this fact, together with the dispersed geography of their stores, they had started a crowdsourcing initiative in 2009.

However, in order to attempt to adapt crowdsourcing to the specific characteristics of Company C, they decide to launch two different initiatives: an IF and the Innovation Awards.

⁶ <http://www.energy-business-review.com/companies/>

⁷ Dedicated Company Internet Website; Accessed on 5th of June 2011

IF is distributed through a dedicated software, where people can submit ideas that later on will be analyzed by a committee. However, just 20% of the employees have access to Internet on a daily basis.

Company C holding’s mission shows up a desire to innovate and, as result of that, an increase of the benefits for human live. The same orientation to innovation is highlighted as one of the company’s value, making a reference to the risk of failure when you try to innovate.

III.2.4) Company D

Company D operates in the telecommunications sector, having around 2000 employees. They made the kick off of a crowdsourcing initiative in 2007 with an IM. This initiative lasts until 2010, when the board of the company decided to stop it.

Currently the company is developing a new mechanism of participation with challenges, but has restricted to a specific topic or certain area. All their employees have access to Internet on a daily basis.

Being in a sector like telecommunications, where technology could be an element that allows a competitive advantage, Company D presents innovation as one of their core values. They see it as “part of their identity”⁸, that could positively surprise the market but always “considering the risk of failure in the technology sector”.

Considering the company’s mission is highlighted a clear goal: to “be the leader in the telecommunication market”. The strategy to achieve it is sustained over the creation of innovative products and services that meet the market needs and create value for the stakeholders.

The following table summarizes the type of crowdsourcing initiative adopted by each company for internal and external targets.

| Crowdsourcing initiatives | Company A | Company B | Company C |
|----------------------------------|------------------|------------------|------------------|
| Ideas Market | ☐ | ☐ | ☐ |
| Ideas Forum | ☐ | ☐ | ☐ |
| Workshop/ Brainstorm Sessions | ☐ | ☐ | ☐ |
| Dedicated External Web Site | ☐ | ☐ | ☐ |

Table 2- Crowdsourcing Modules

⁸ Company D core values; Web site, accessed on April 15th

IV. Method and Data

IV.1) Survey Research Method

Before survey design and interviews, it was defined which should be the key dimension considered to meet study goals as well as how they should be structured.

To support this study, Prof. Villarroel provide us with a framework - Crowdsourcing Assessment Framework, Villarroel (2011) - that was used as reference. This framework states that there are four main “functions” in crowdsourcing: strategy, organization, process and technology. Strategy could be analyzed as a function that is transversal to the entire company, influencing the remaining functions and all the company activities (or “capabilities”). Simultaneously, the remaining three dimensions impact on all the company capabilities, such as R&D and Operations (a more “internal” activity), or Marketing and Sales (“interfacing” activity) or even Community related activities (“external” activities).

Considering the framework provided by Prof. Villarroel as well as former literature, the survey was created with four different dimensions (See more on Exhibit 4). The structure in each dimension was the same, being oriented to capture the key inputs that allow to generate effectively a score that meet the purpose of this study, but at the same time making a parallelism between what the company do in their core activity and have in the crowdsourcing initiative.

The following table summarizes the methodology used with each of the survey participants.

| Participant Number | Company A | Company B | Company C | Company D | Supplier (Company E) |
|--------------------|---------------------|---------------------|---------------------|------------|----------------------|
| 1 | Interviews + Survey | Interviews + Survey | Interviews + Survey | Interviews | Interviews |
| 2 | Interviews + Survey | Survey | - | - | Interviews |
| 3 | Survey | Survey | - | - | Interviews |
| 4 | Survey | - | - | - | - |

Table 3- Methodology used during the research

IV.2) Interviews

Previously to the survey design, eight interviews were conducted. Half of them were with the crowdsourcing platform provider and the remains ones equally distributed by the participant companies – see Exhibit 5 for more details.

IV.2.1) Platform Provider

All the interaction with the crowdsourcing platform provider was personal interviews. The meetings were with the Managing Director and Co-Founder (one meeting on phase 0; Participant

E-1), a Customer Manager (one meeting also on phase 1; Participant E-2) and with a Board Member and co-founder (two meetings for phase 3; Participant E-3).

Despite the four meetings other interactions were made, through e-mail, during the study. Those interactions were to receive feedback and know the opinion of a company more familiar with the topic.

IV.2.2) Platform User Firms

Four companies that use the crowdsourcing platform were interviewed in two different moments: during the survey design and during the survey implementation.

IV.2.2.1) During Survey Design

On this stage, four companies were interviewed. The people interviewed were innovation managers with responsibilities in the initiatives.

It was defined a guideline to keep the same structure in all the interviews, despite the different methodology used in this phase of the process (more on Exhibit 3).

Company A and Company D were interviewed personally, since both of them had HQ in Lisbon. Company B participated through a telephone call, while Company D took part in this study through a Skype call meeting.

IV.2.2.2) During Survey Implementation

From the four companies that took part on survey design, three decided to participate in the implementation of the instrument – Company A, Company B and Company C. After taking part on the survey design, Company D had decided to do not participate in the implementation of this study.

Two interviews were conducted with Company A with the Project Leader (Participant A-1) and with an Innovation Manager (A-2). Other two employees from Company A participate through the online survey.

On Company B and Company C it was made an accomplishment during the period that the survey was available online. We asked for participants' doubts and we were trying to understand some of their answers.

Company B participated in the survey, answering the project champion (Participant B-1); a top-level executive presented in the Innovation team that analyzes the viability of the ideas (Participant B-2); and a HR manager (Participant B-3).

The only participant from Company C was the project day-to-day leader (Participant C-1).

IV.3) Survey Design

Considering the dimensions define, it was necessary to design and to create a survey that generates quantitative data (Groves et al, 2009). Since the goal of the project was to create a mechanism that allows to measure and to analyze companies that had implemented crowdsourcing initiatives, the survey should include the key dimensions associated to that decision.

A relevant technical issue is related to the survey method. One of the first things to do is to define a response format to be used for collecting information from the respondents (Trochim & Donnelly, 2008), having always in mind the goal of the project. Considering this it were used four different questions types:

- Based on level of measurement (1-5 Likert Scale)
- Open questions (Write down text type)
- Dichotomous response formats (Yes / No type)
- Multiple-choice questions (“Choose the best option” or “Choose all that apply” type)

Since the idea was to give sentences and enforce respondents to rate it, it was necessary to use a question type with an interval-level response format such as a 1-5 Likert scale (Murphy & Likert, 1938). According to Trochim et al (2001), it's possible to generate a final score through the sum of the scales in each item, which is applicable to this case being achieved the survey purposes (Fowler, 1995).

1-5 Likert scale has a middle value, a neutral or an option for those respondents that are undecided. This option is important in a study like this, where the participants could not have enough experience as users or know how to rate some sentences.

In other questions that are part of the survey, some of them were open questions. These questions usually asked for data related to the initiative, which gave the possibility to understand specific characteristics of each company. (Fowler, 1995)

Other questions are more informative or just to confirm some information obtained in the first round of meetings with the companies, using for that a dichotomous response format.

Finally, multiple-choice questions were also present in the survey. Inside this type of questions it is possible to distinguish two different sub-types: the cases where the respondent can choose just one option (the idea was to enforce the respondent to decide) or in other cases where they could select more than one option (applicable in cases where questions are more general).

Despite being multiple-choice questions, it was possible to make a rank of the options for the analysis step based on company's habits or current practices and even on technological

evolution. This forced ranks was made giving more points to the companies that, by their practices or options, show a higher degree of openness to external non-employees or uses the most recent technologies. We believe that this conditions reflects a higher influence of crowdsourcing on company's activities

After defining the response format it was chose the best method to obtain the answers. Considering the study goals and the sample of companies it was defined two methods: e-survey for the companies with the HQ away from Lisbon and interviewer-administrated survey for the company with HQ in Lisbon.

Ideally an interviewer-administrated survey is the best method for this case since the questions are numerous and with some complexity, about a brand new topic and that involve persons not so familiar with it. Simultaneously, the interviewer could obtain more information through the interaction with the participant. (Sapsford, 2007)

In this study the value added came not only from the score obtained after complete the survey, but also from the interaction with the respondents.

IV.4) Survey Data Description

IV.4.1) Platform Provider

In phase 0 was introduced the business concept of the company and was shown how operates their software by analyzing the IM of a company not insert in this study.

Phase 3 of the meetings was oriented to the definition of the survey dimensions. E-3 mentioned that "In this type of metrics is important to consider all the cases, avoiding a natural orientation for companies in the fast moving consumer goods sector", since that in some industries concepts like "NPD are not applicable like some Business to Business (B2B) companies or players in the utilities market".

In the same round of meetings, the E-3 called for "The need to create a clear distinction between internal and external crowdsourcing" and give technical suggestions about the options that should be consider in each question. After finishing phase 3, it was given the satisfaction with the "level of analysis and quality of the survey".

IV.4.2) Platform User Firms

IV.4.2.1) During Survey Design

Company A had a dedicated department responsible for manages the activity in the initiative, where the main responsible for the innovation is Chief Executive Officer (CEO). Complementary to the existence of two distant workflows of internal crowdsourcing, Company A has also some actions oriented to external non-employees. Considering the dynamic of a technology-driven

sector, the company promotes brainstorming sessions with customers, suppliers, partners, opinion makers, consultants and research teams trying to anticipate and to preview trends. The brainstorming sessions are used to discuss a “specific but vague topic (e.g. mobile phone of the future)”, being promoted by Company A. The results of the sessions are analyzed and “could be tested through a challenge in the market of ideas”, using the crowdsourcing to “test the concepts and to understand the organizational reaction” [A-2].

Company B has a process of selection very similar to the one that is made on the Company A. After the market approves the ideas, a “team of 13 persons, where are present the leaders of all the business units, analyzes and choose which should be implemented”, according with B-1. Company’s B Innovation department manages the crowdsourcing initiative, which faces “serious difficulties since many of our employees does not have access to a computer on their activity”, according with B-1. Despite the low access to technology, Company B decide create “Kiosks, in all the regional HQ and with access to the intranet”. Other of the problems faced by Company B is “that one third of our employees have more than 40 years old, which make them less willingness to participate”.

Company C has an IF that is managed by the Innovation department. Three steps compose the workflow in the IF. First the idea is created and shared, where the employees could comment. After that a “Moderator” based on the comments and on their opinion make a first filter of the validity of the ideas. The ideas approved go to the next level, where a “Committee” [C-1], composed by 40 persons of 26 business areas, discuss the ideas and decide if they should or not be implemented.

However Company C faces the same problem of Company B, since “many of our employees operates in the stores, reason why we had to create mechanisms to involve them” [C-1].

In order to solve this issue, it was created the “Innovation Awards”, an initiative promoted across the holding (Company C are part of a holding), giving the possibility to participate in the process of idea generation. “Participants have to submit their ideas that will be selected by the directors”, according with C-1. The main difference is that to participate is not required any technology, is just necessary to fill a document with the idea and their application inside the company.

The innovation awards have two differently targets, with one initiative focusing in the “top-middle management and other targeting the store employees” [C-1].

According with C-1, these decisions were made to meet the Company innovation purposes: “Everybody innovating”.

Company D started a crowdsourcing initiative (2007), which was not well succeeded. They had an unsuccessful experience with an IM from 2007 to 2010, mainly because of “the low

quality of ideas, that were too generic and without application in the reality, because the challenges had a lack of specification”[D-1]. Company D’s employees use computer and Internet on daily basis, since company “outsources all the technical activities” [D-1].

For now, Company D still has a crowdsourcing initiatives promoted at a corporate level and oriented to all the employees of the group, “where the winners receive the prize from the CEO” [D-1].

Despite this, Company D is planning a new format “with a new focus challenges, oriented to each business unit, where exist a “Pivot” responsible to promote and evaluate the ideas”, according to D-1’s plan. Under this new model “the Pivot is essential since have to manage the challenge”, that does not have any financial reward. Company D believes that “intrinsic motivations are enough”.

IV.4.2.2) During Survey Implementation

The two meetings in this stage, on Company A, reveal two different perspectives of the crowdsourcing initiative. A-1 saw the initiative as something “internally but also open to some external sources that have the access to our intranet, the basic requisite to participate in the market”. On the other hand the A-2 sees the initiative as “something internally, because when we want to involve external parts, we create brainstorming sessions and we invited customers, suppliers, opinion makers, partners, consultants and research teams”. Since the interviewed innovation manager is responsible for that process of external involvement, he went further saying, “The market is used to test in our group some of the concepts analyzed during the brainstorming sessions”.

Both interviewers agreed on some effort of the top-level involvement, however “they do not participate in the initiative, reason why we are creating a training twice a year for the top-level managers” [A-1].

Since Company B has common innovation policy for the entire group, during the interviews it was not considered the external crowdsourcing platform because “we do not manage it, it is managed from our HQ. The strategy for innovation is transversal (to all the group)” [B-1].

Company C is also a subsidiary company but that has autonomy to manage and to define an innovation strategy that fits with the group values. Company C does not have a CIO but a Managing Director for Innovation (the initiative project champion that is also the Manager for the Information System). According with C-1, the initiative is oriented to “small ideas that are easy to implement”. Simultaneously, Company C gives autonomy to the stores manager innovate

using a policy based on the *Kaizen*⁹ concept where the store employees have “autonomy to decide implement some ideas” [C-1]. This decentralization “makes the company saves money since reduced the number some local inefficiencies” [C-1].

The information obtained during the different round of interviews with the company that had participated in the survey application is summarized on Table 4.

| Domain | Topic | Company A | Company B | Company C |
|----------------|--|---|---|--|
| Strategy | Board Involvement | <ul style="list-style-type: none"> • CEO is the innovation manager | <ul style="list-style-type: none"> • Innovation Strategy defined at a corporate level | <ul style="list-style-type: none"> • No CIO • Decide Implementation only |
| | Initiative Goals | <ul style="list-style-type: none"> • Culture • Incremental Innovations | <ul style="list-style-type: none"> • Stimulate innovation | <ul style="list-style-type: none"> • “Everybody Innovating” |
| Organizational | Crowdsourcing Training | <ul style="list-style-type: none"> • Presentations (Trainees + Top Management) | <ul style="list-style-type: none"> • Videos • Meetings (Equal for all the company) | <ul style="list-style-type: none"> • Idea forum is simple |
| | Crowdsourcing Incentives | <ul style="list-style-type: none"> • Prize Rewards • Recognition | <ul style="list-style-type: none"> • Prize Rewards | <ul style="list-style-type: none"> • Recognition after implemented |
| Process | External Involvement | <ul style="list-style-type: none"> • Ideas Market (some cases) • Brainstorming sessions | <ul style="list-style-type: none"> • Do not participate in the initiative. • Corporate dedicated web-site | <ul style="list-style-type: none"> • Do not participate in the initiative • No initiative for external |
| | Metrics | <ul style="list-style-type: none"> • Low diversity of metrics | <ul style="list-style-type: none"> • Provided by the supplier | <ul style="list-style-type: none"> • Small number of ideas • Do not use it |
| Technology | Communication Tools with innovation purposes | <ul style="list-style-type: none"> • Use the market internally • Different tools for external | <ul style="list-style-type: none"> • Use the market internally • “Kiosks” • Do not contact with external | <ul style="list-style-type: none"> • Ideas forum • <i>Kaizen</i> concept • Innovation awards |
| | Data Analysis | <ul style="list-style-type: none"> • Analyzed performance per department | <ul style="list-style-type: none"> • Low data analyzed and just absolute values | <ul style="list-style-type: none"> • Low data analyzed • Small number of ideas |

Table 4 – Summary of some information obtained during interviews

V Analysis and Propositions

In this chapter we will analyze the results of the survey application in three companies. A survey instrument designed with the purpose of measure crowdsourcing implementation sustained the methodology. In addition to the survey, we had interacted with the participants, trying to go deeper into our analysis, covering some qualitative aspects that are not included on the survey results.

V.1) Quantitative analysis

V.1.1) Company’s overall perspective

In this chapter we will consider the results generated through the survey application, considering each company as reference. The survey results obtained should be analyzed per dimension and for the company as a sum-up of the four dimensions.

⁹ According with Wikipedia, *Kaizen* is a Japanese word which means “improvement” or “change for the better”

| Dimension | Company A Score | Company B Score | Company C Score |
|-----------------------------|-----------------|-----------------|-----------------|
| Strategy | 75,22% | 67,54% | 60,96% |
| Organization | 69,04% | 53,92% | 57,52% |
| Process | 52,41% | 46,05% | 47,37% |
| Technology | 74,24% | 47,47% | 59,6% |
| Final Averaged Score | 67,73% | 53,75% | 56,36% |
| N= | 4 | 3 | 1 |

Table 5 – Survey score summary (All participants included)

The results generated in this chapter will help to access the data necessary to support the answers to the Propositions presented.

V.1.1.1) Strategic Dimension

Strategic dimension was design to measure the board involvement, their objectives and how is managed the initiative. Higher values means that the board perceives the initiative as something important reflected on their higher commitment and on the involvement of the project day-today leader. Considering the results of this dimension, both companies had score a value above 65% as could be seen on Table 5.

Focusing on some of the questions presented in the strategic dimension, it could be interesting to highlight questions 7 and 8, more focused on the board role.

Considering the answers to question 7, the higher scores of the companies, it means that the board sees the initiative as a way to change corporate culture. In Company C and Company A the board goes further and wants also to increase margins which is reflected on their higher score on question 7, presented on Table 5.

Despite the mentioned goals, the score on board involvement is lower for both cases. This means that the board gets somehow involved but just for less demanding tasks. For Company C this situation is much more evident.

| Question number | Question Topic | Company A Score | Company B Score | Company C Score |
|--------------------------------------|---|-----------------|-----------------|-----------------|
| 7 | How the board sees the initiative | 87,5% | 50% | 100% |
| 8 | Board directors involvement | 57,5% | 36,67% | 10% |
| 9 | Who manages the initiative | 83,33% | 66,67% | 66,67% |
| 12 | Who are involved in the Initiative | 75% | 77,67% | 100% |
| 13 | Initiative changed the way as innovation is perceived | 87,5% | 58,25% | 50% |
| | Initiative changed company culture | 81,25% | 50% | 50% |
| Strategic Dimension Score (%) | | 75,22% | 67,54% | 60,96% |

Table 6 – Summary of the Strategic Dimension score

Question 9 and 12 are related to the initiative management and theirs inside scope: if it is oriented to a specific division or is something that involves all the company divisions. From the

scores it is possible to assume that the initiatives are managed either by dedicated departments or by the department of innovation, with a higher internal scope, do not being limited to a department but asking for a higher corporate involvement.

Making a comparable analyses, Company A board sees the initiative as something with a broader scope and are involved until a certain level, trying to agglutinate the rest of the company as a way to change company’s culture and the way that innovation is perceived. (Question 13 scores are higher than 80% – Table 6)

On the case of Company B, the board involvement is lower, comparing to the Company A, as a reflex of a lower score on board goals, which seems to have an impact on the way that participants see the initiative, assuming neutral opinions (question 13 scores).

Company C has a situation where the board sees the initiative with ambitious perspectives, however is not accomplished by their involvement despite the high internal scope. This low involvement could be the responsible for the reduced effect that the crowdsourcing initiative has in the company (50% in both sentences in question 13).

V.1.1.2) Organizational Dimension

The organizational dimension was created to measure how companies are organized: internally (focusing on topics like rewards or training) and externally (particularly the interaction with external non-employees for innovation purposes).

One of the questions that are important to highlight is question 18 (see Table 5) that was designed to understand the role of external non-employees as a source of innovation. In Company A and Company C they have an important role (score 87,5% and 75%, respectively) while in Company B their actions seem neutral for innovation purposes (58,25%).

| Question number | Question Topic | Company A Score | Company B Score | Company C Score |
|---|---|-----------------|-----------------|-----------------|
| 18 | External non-employees important source of innovation | 87,5% | 58,25% | 75% |
| 21 | How many people run the initiative | 58,33% | 33,33% | 100% |
| 26 | Expected time spend in the initiative | 25% | 12,5% | 25% |
| 27 | Actually time spend in the initiative | 18,75% | 12,5% | 25% |
| Organizational Dimension Score (%) | | 69,04% | 53,92% | 57,52% |

Table 7 – Summary of the Organizational Dimension Score

These scores reflect a perception that could justify some attitudes towards non-employees involvement in the initiative.

As we saw before, the crowdsourcing initiative has a broader scale, trying to involve different areas of the company, demanding the need of some resources to run it on daily basis. It is

expectable that the number of resources allocated reflects the effort that the companies put in the initiative. According to the question 21, the scores (see Table 7) mean that Company C has more dedicated employees when compared to the Company A and B. Moreover, Company C has at least 11 employees running the idea forum. Despite the relative superiority, Company A's score is almost 58%, which means that the number of resources allocated to the initiative is not very high.

For all the companies analyzed the initiative seems to be a complementary activity, asking for the employee's involvement but not being a priority, which is reflected on the time consumed associated (question 26 and 27 scores). It could be interesting to compare the scores on this two questions, where in Company A is expectable that the time actually spent on the initiative should be lower than the expected one, reflecting the idea mentioned above.

V.1.1.3) Process Dimension

This dimension is related to the way which companies manage their operations and their interactions with external non-employees on their core activities. On process dimensions, both companies present the lower scores (see results on Table 8). Higher scores on this dimension means a higher level of openness to external non-employees in the company core activity but also on innovation matters, having the company different measures for the initiative performance.

| Question number | Question Topic | Company A Score | Company B Score | Company C Score |
|------------------------------------|--|-----------------|-----------------|-----------------|
| 32 | Outsources the development of new technologies | 50% | 25% | 100% |
| | Outsources the development of new products | 50% | 25% | 75% |
| | R&D department interacts with external non-employees | 68,75% | 100% | 100% |
| | NPD is exclusively performed by external non-employees | 25% | 0% | 0% |
| 36 | External non-employees involvement on the initiative | 25% | 0% | 50% |
| Process Dimension Score (%) | | 52,41% | 46,05% | 47,37% |

Table 8 – Summary of the Process Dimension Score

In order to understand if the companies' outsource some of their operations or activities, it was analyzed the frequency that companies use external service providers.

Company C score on question 32 (Table 8) reflects an interesting level of openness to external, based on the current practices in the development of new technologies and new products. On the opposite side, Company B makes those activities internally, as reflected on question 32. Regarding this topic, Company A assumes a neutral position about the outsourcing of the development of new technologies and new products.

On the other hand, the companies' scores on question 36 shows that in some cases (Company A and B) the external non-employees do not participate in the initiative or, at least, assume a neutral position (Company C). A trend confirmed by the no exclusive participation of external stakeholders in NPD process, despite the interaction with the R&D department.

The process dimension has the lowest score for both companies, reflecting a weak involvement of external non-employees on company's activities and a lack of participation in initiative activity. Despite Company A's highest score, it's clearly lower when considered the remaining dimensions.

V.1.1.4) Technological Dimension

The last dimension is looking for the type of technology available at the companies, focusing on the technological tools used but also on data generation to support the decisions related with the crowdsourcing initiative. A score near 100% means that a company uses the most recent technologies to interact with all their stakeholders, generating related data to better evaluate participants' performance.

This dimension captures also the companies' perspectives with the sharing technologies. The cases where initiative is considered a first step on the sharing technologies scored positively on this dimension.

The companies interviewed have different strategies regarding technology. Company A uses more advanced technology for employees when compared to the score for external non-employees (score of question 47 and 48 on Table 9). On the opposite side, Company B scores the same in both questions. This result does not mean that Company B uses the same technology to interact with employees and external stakeholders but that at least they are similar regarding the level of technology.

Company C privileges their employees by using tools most advanced technology.

| Question number | Question Topic | Company A Score | Company B Score | Company C Score |
|--|--|-----------------|-----------------|-----------------|
| 47 | Technologies most used among employees | 70,33% | 50% | 66,67% |
| 48 | Technology most used with external non-employees | 37% | 50% | 55,56% |
| 50 | Most important tools to promote innovation with external non-employees | 88,89% | 27,78% | 66,67% |
| Technological Dimension Score (%) | | 74,24% | 47,47% | 59,6% |

Table 9 – Summary of the Technological Dimension Score

When is considered tools to promote innovation, companies have different performances (question 50 score - Table 9), Company A scores almost 90%, which reflects an

effort to communicate with external non-employees to pursue innovation. Company B scores are very low, while Company C stays in a middle between the two companies but with a positive value.

An important factor to be considered on this last issue is the sectors of the companies, since Company A operates in a sector more technology-driven, which could increase the availability of some technologies, moreover when compared with Company B and C.

V.1.2) Analysis of survey results – project day-to-day leaders perspective

Considering that it was only interviewed one person from Company C, a comparable analysis by company could be biased considering the position in the company. The answers from the Company A and Company B project leaders were higher than the average of the respective company in all the dimensions considered.

To avoid that, on this chapter will be made a briefly analyses of the answers from the project leaders of the three companies.

Table 10 summarizes the answers from the three project leaders in the four dimensions analyzed. The results presented 10 reinforce the idea that the strategy is the dimension where each company has the highest score, being the same conclusion valid for the lowest score in the process dimension.

The score in the strategy dimension on Company A and B fits with what was analyzed in the previous section, while on Company C we have a score near 60%. The comparable lower result of Company C is justified by the low involvement of the board (scored 10% on question number 8- Table 6) and the lack of focus of their initiative, since is a general IF

| Dimension | Company A project leader score | Company B project leader score | Company C project leader score |
|-----------------------------|--------------------------------|--------------------------------|--------------------------------|
| Strategic | 74,56% | 71,93% | 60,96% |
| Organization | 72,55% | 62,09% | 57,52% |
| Process | 54,39% | 57,89% | 47,37% |
| Technologic | 79,29% | 56,57% | 59,6% |
| Final Averaged Score | 70,2% | 62,12% | 56,36% |
| N= | 1 | 1 | 1 |

Table 10 – Summary Project Leaders Score

Considering the results it is possible see that companies with higher scores in the strategic dimension have also relative higher values in the organization dimension. This mean that the companies in the sample keep the same relative ranking in this two dimensions.

Process dimensions, despite be the lowest, is influenced by the business sector where the company operates. Some sectors ask for a higher level of openness, as in this case. Since Company B operates in the utilities sector, which is characterized by the low degree of

innovation in the product, companies have a higher level of openness impacting on the dimension score.

Indeed, the link with the business sector has also to be made for the technologic dimension. The technology availability and their role on competitive advantage seem to have a significant impact on the technology score.

In conclusion, and based on the comparable project leader results, the strategic and organization dimensions are connected, being the organization always lower. At the same time it is possible assume a positive relation between strategic and organization dimension.

Moreover, process and technologic dimensions seem to be affected by the sector where the company operates.

V.2) Qualitative analysis

In this chapter it will be analyzed the information obtained in the interviews in both phases: during survey design and when the instrument was implemented.

From the interviews it was possible understand that Company A is very focused on innovation. This idea could be supported by the fact that the head of innovation is the CEO but also on the consensus between A-1 and A-2 related to the board of directors effort or in the autonomous department that manages the initiative.

In addition to the CEO, there is also an accomplishment by a top-level manager. This manager reports the activity in the department that manages the crowdsourcing initiative, where is inserted the project leader (A-1). Despite this top-level involvement in the management, the executive managers do not take part in the process of ideas generation.

According with A-1 and A-2 the IM has different targets. The first considers that the market is available for employees but also for external non-employees with access to the company Intranet, while A-2 only considers the company employees as users.

Regarding Company B, all the interviews were centralized on two main aspects: the difficulties of diffuse a crowdsourcing initiative; and the HQ policy related with external involvement in innovation. The characteristics of the HR, without access to Internet and their age, were defined as an important limitation to involve the employees. According to B-1, the idea was explain to employees that “innovation has impact on the company success because is a differentiator element among competitors”.

On the other way, the group where is inserted Company B seems to have clear goals about the external non-employees involvement in innovation. The creation of a dedicated web site, accessible through all the subsidiaries, appeals to external non-employees participation, based on their auto selection, considering their field of expertise (Lakhani & Panetta, 2007).

The interview with Company C was centralized in all the events that the group has to face the difficulties of a workforce that does not have access to the crowdsourcing platform, creating non-technological events to involve employees and have access to their ideas. In addition to that events, Company C also create a policy of decentralization, which gives autonomy to each of their stores to promote incremental innovations.

All this efforts to involve employees in innovation are inserted in a new policy that wants to put “everybody innovating” [C-1]. To pursue it, the board of directors takes an active role in recognition.

V.3) Survey comments analysis

In the survey there was the option for survey respondents add their ideas about a specific topic in the option “Other (Please Specify)”.

In the strategic dimension, A-2 respondent claimed that the board is also involved in the process of “Choosing the challenge” that is launch in the IM. For score purposes, this option gave the same points that “Selection of ideas”, since both action involved the same type of interference from the board.

Still in the strategic dimension, respondent C-1 explains that the project champion is the “Innovation Manager Director” which is not the CIO. The scored for this answer was a simple average between the options “CIO” and “CTO”, since the project champion is a manager with responsibilities in two areas (innovation and information systems).

Regarding organizational dimension, C-1 respondent wrote that the incentives for the initiative include the “Recognition for the best ideas after implemented”. For score purposes, this option was considered equivalent to the “Company Recognition” answer.

On the technological dimension there were two respondents that had add other options.

Related to question number 47 about the technology used internally for communication, A-1 respondent claimed that “Intranet” is an important tool for internal communication. This option was considered for the score, being equivalent to e-mail since nowadays this is not a brand new technology, but rather a very common tool in the companies, having a lower degree of novelty.

To conclude, participant C-1 decided suggest some aspects that should be considered in the assessment of the effectiveness of the crowdsourcing initiative saying that would be interesting study “forms of engagement of employees in order to get involved and to give ideas that are aligned with the company's strategy”. Moreover, C-1 adds also that would like to know “how [avoid] employees to give non sense ideas”.

V.4) Comparison of analysis

In this chapter it will be discussed the fit between the information generated with the survey and the information obtained during interviews for the survey design and survey participation.

V.4.1) Similarities between interviews and survey results

During this chapter it will be analyzed the topics where survey results fits with the information obtained during all the interviews.

Some of the information that was obtained during the interviews was important to complement and better understand the company's score.

V.4.1.1) Board, Goals and Initiative Management

When comparing the results from interviews and survey results, it was possible to highlight some of the information gathered through the interviews was aligned with the survey results.

On Company A, the board support was one of the most facts highlighted during the interviews, sustained in the fact that the innovation top-manager are the CEO but also on the existence of an autonomous department responsible for the initiative manager. Despite that involvement it was said: "It is always possible to participate in more related decisions" [A-1]. This sentence is justified by the low involvement of the board in activities like "Creation of new ideas", according with A-1. This lack of involvement of the board and other top-managers, justifies the focus of the crowdsourcing related training.

Company B scores lower than Company A since the board support was less effective, reflected on the fact that the innovation department manages the initiative. This situation should be analyzed having in mind the goal of the project: "Stimulate innovation on persons day-to-day-activity" [B-1].

Company C is a distinct case because has a different crowdsourcing module. The high score on the goals with the project is justified by the company innovation goals, not particularly with the IF. Indeed, the survey score on this dimension could be influenced by the fact that we only have one respondent from this company, being that respondent the project leader.

The initiative goals are not accomplished by the board involvement, something that fits with what was explained in the interviews. This lack of involvement in the ideas market could be justified by the diversity of activities – Innovation Awards, autonomy for the store managers, *Kaizen* concept – and is reflected on the crowdsourcing initiative management, centralized in the Innovation Department.

In conclusion, the survey results fits with the information obtained, not only because the strategic dimension score is one of the highest but also because it seems that different objectives

for the initiative influences the board involvement and initiative management. As Shah (2006) states, the governance structure impacts on the level of participation, which means that a dedicated department could generate a positive impact on the employees' participation.

V.4.1.2) External role in innovation – Company A and C

To consider the role of external non-employees in innovation it is important to understand the way that the company looks for external involvement.

For Company A, the survey participants do not seem to understand what is the role of external non-employees in the IM. In one side, only the “service providers with internet key” [A-1] could participate in the IM. However, in the same company other participants do not agree with that, saying “the market is only for company's employees”. According to A-2, to involve external employees on innovation “we create brainstorming sessions” where only a selected number of stakeholders could participate.

This small lack of internal fit could be a consequence of the lower external non-employees involvement in the IM, reflected on the company's process dimension score. We assume that the differences on the opinions of the participants are not enough to conclude that the involvement of external non-employees is reduced and rare. What seems to happen is that external non-employees are involved in innovation, however not through the IM. Moreover, the brainstorming sessions are directly oriented to external non-employees that reinforce this idea.

On the Company C's case, the interaction with external non-employees happens more frequently in outsourcing activities, like reflects the score. The retail business is described by C-1 as “a sector where the degree of innovation is relatively low”. This situation influences the involvement of external stakeholders in the innovation process. Exist some interaction with suppliers for the implementation of some ideas, however this is something occasional.

The non-involvement of external non-employees could be seen as part of the “new learning routines” defined by Alexy & Henkel (2010) as part of the process to adopt an open innovation model. In both cases, the direct participation of external stakeholders in the initiatives is not significant or does not exist. Despite that companies interact with them through other tools.

V.4.2) Discrepancies between interviews and survey results

Per opposition, in this chapter the focus will be on the cases where the information obtained in the survey goes in the different direction that the one that was generated in the interviews process. In this sub-chapter the information will be more sustained in qualitative data.

V.4.2.1) External role in innovation –Company B

Company B presents a different situation on this topic when compared to Company A and Company C.

This happens because Company B has an innovation strategy defined in a corporate level. Considering the score related to the involvement of external non-employees in innovation process, that was very low. This score is justified by the organization where Company B is inserted, which has a platform fully dedicated to external non-employees managed by a subsidiary.

This means that the Company B's effort to involve external non-employees is reduced by the existence of a dedicated of platform fully dedicated to them.

Among that, is biased to conclude that Company B does not involve external non-employees. Indeed they do not do it because they have a corporate worldwide strategy looking to involve external non-employees from all over the world.

This strategy could allow the Group to increase the “granularity”, impacting on a reduction of the “cost of integration” (Benkler, 2002) by increasing the scale of the project.

V.4.2.2) Communication tools and employees

The three companies analyzed had score higher values on the internal tools which are more used to promote innovation and that could be mean that the companies use the most recent technologies.

However on Company B's case, this fact does not fit with some information obtained during the interviews with the participants. From the 3500 employees, only 15% works, on daily basis, with a computer with access to the Internet. Since the crowdsourcing initiative was distributed through software, this fact creates a problem of scale.

Despite the high score, the truth is that to promote innovation they have to use other mechanisms to attend to the particular characteristics of their human resources (“Kiosks”). In this case, the score on internal tools does not fit with this situation.

Company C has the same difficulties because the number of people that work in the stores and do not have access to Internet represents “80% to 90% of the more than 40.000 employees” [C-1]. To involve them, the company decides to give autonomy to the stores managers and to promote innovation across the company with specific awards.

On the case of Company A the situation is different, since they have a higher number of employees, although some of them are “operational technicians or commercials, that do not use a computer in their activity”. Answering to that, Company A decides to allow the “access to the market of ideas from home using an internal portal” [A-1].

In conclusion, all the companies' actions go further on attempt to achieve the "Peer Production" (Benkler, 2002), trying to create all the conditions to involve more employees. On Company B through the creation of "Kiosks", on Company C with the "Innovation Awards" and on Company A by giving the access to intranet out of the office. More important than the question related to the scale and number of employees, is their possibility to participate.

V.4.3) Findings on Metrics

Other of the main findings obtained with the survey instrument and during interviews was related to the use of metrics.

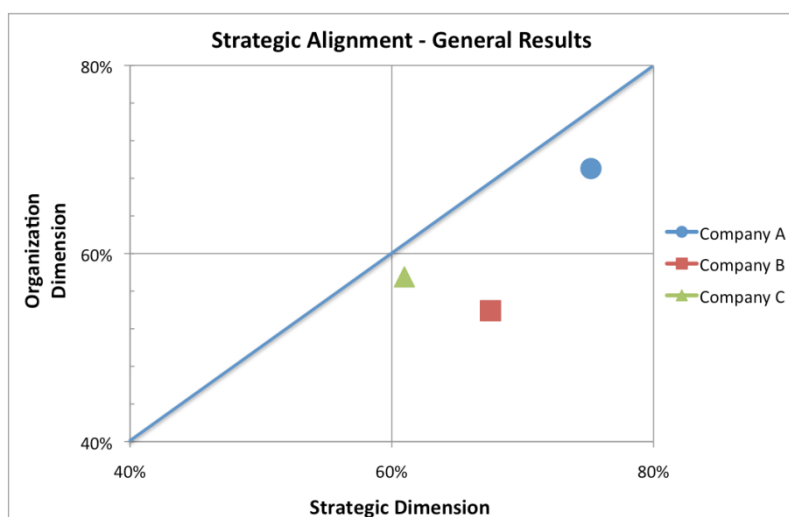
All the companies present in the study collect data about the initiative, which is obtained and analyzed by the same department that manages the day-to-day activity. However, companies do not use the data to create metrics for tracking the performance of the initiative (More information on Exhibit 12).

V.5) Propositions

Considering the previous literature about this topic, together with the survey and the analysis of interviews it is possible to advance, in this chapter, some explanations to the research questions previously raised.

Proposition P1: The alignment of Organization and Strategy's dimensions makes the implementation more effective

Using the analyses made on the previous sections as reference, it was verified a close connection between organization and strategy's dimensions. Graph 2 compares the scores of the previous dimension based on the answers obtained.



The blue line represents a frontier where the organization and strategy's dimensions are equal. When a company has both dimensions aligned it means that they are close to that frontier. Using the graph as reference, we can deduce that Company C has a better alignment from all cases analyzed while Company B is in

Graph 2 – Strategic alignment for the all sample

the opposite side despite having a higher score in the strategy's dimension.

Focusing on crowdsourcing's implementation, Company A has the higher score (63,33%), while Company B and Company C scored 46,76% and 53,58%, respectively.

Based on these values, it is possible to conclude that the better alignment of Company C has impact on the effectiveness of the implementation, especially when compared to Company B. The better alignment is supported in a corporate policy that pursue put "Everybody innovating" [C-1], where IF is part of that strategy (which justifies a comparative lower score on strategic dimension).

Despite the higher score of Company A on crowdsourcing's implementation, the difference for Company C's implementation is lower when compared to the scores in organization and strategy's dimensions.

To make this proposition stronger, we decide to compare the same alignments but



Graph 3 – Strategic alignment for project leaders

considering only the responses from the project leaders. In this case, Company A has a better alignment. However, the conclusion presented before is still valid.

Company A scored 66,84% in the implementation, being followed by Company B

(57,23%) and Company C (53,48%).

Company A has a "dedicated

department where the main responsible is the CEO" [A-1] which reflects the higher number of resources allocated to the initiative and consequently a better alignment.

From Graph 2 to Graph 3, the main difference is the Company B's scores in organization and strategy's dimensions. According to Company B's project leader, the implementation score is also higher.

However the difference between Company B and C in crowdsourcing's implementation is tiny when compared to the differences in strategic and process' dimensions. Once again, the worst strategic alignment of Company B impacts on their implementation score, justified by a "strategy for innovation (that) is transversal (to all the group)" and a structure where "one third of the employees have more than 40 years old" [B-1].

Proposition P2: The availability of the technology is not critical for initiative diffusion among employees

From the previous sections, it was possible see that all the companies included in this study have taken some actions to involve in innovation as much employees as possible.

Considering Table 11, it is possible conclude that the number of potential participants in the initiative are lower than the total number of employees. This situation is justified by difficult access to the technology that supports the crowdsourcing initiative.

| | Company A | Company B | Company C |
|--|---|--|--|
| Nr of employees | More than 10.000 | 3500 | More than 40.000 |
| Potential crowdsourcing initiative participants | 3000 (30% of the total) | 525 (15% of the total) | 4000 to 8000 (10%-20% of the total) |
| Other activities | <ul style="list-style-type: none"> • Intranet access | <ul style="list-style-type: none"> • Kiosks | <ul style="list-style-type: none"> • Innovation awards • <i>Kayzen</i> concept |

Source: Interviews and Companies web sites

Table 11 – Companies HR structures and activities to involve employees

The major influence on the availability of the employees is the sector where the company operates, impacting on the human resources’ structure. According with C-1 is necessary “create mechanisms to involve” employees.

All the companies analyzed has those mechanisms, sustained on the idea that people that are not directly linked to a specific topic could generate more innovative ideas (Jeppesen & Lakhani, 2009).

Trough all the activities presented on Table 11, companies involve employees on the innovation topic. The main finding is that companies need to adapt the way they interact, customizing the communication tools to the specific characteristics of the company’s structure. More important than the number of employees is give them conditions to participate, attending what Chesbrough (2003) defined as the “mobility of the workforce”.

In conclusion, technology does not limit the access and participation of employees in the crowdsourcing initiatives. Notwithstanding the importance of technology, companies have to adapt the diffusion of crowdsourcing initiative to the particular case of their human resources. In 2003, Chesbrough mentioned that crowdsourcing could not be applicable to all the companies. This proposition defends that a company should adapt the diffusion and the tools for crowdsourcing according with their specific characteristics: sector where operates and HR structure.

Proposition P3: The involvement of external stakeholders on operations is not followed by a crowdsourcing initiative participation

The survey results revealed that all the companies interact with external non-employees on their core activity, outsourcing part of their operations.

This proposition consists in the fact that although companies involve external stakeholders in their operations, this involvement is not verified in the crowdsourcing initiative where companies seem to have some restrictions on involving external non-employees. On Company A, they privilege the participation of external employees through other tools that are not the IM, while Company B engages them with a dedicated web site. Company C does not involve any external stakeholder directly in the crowdsourcing initiative.

Former studies argue that the interference of external sources on crowdsourcing initiatives impacts positively on the performance until a tipping point (Laursen & Salter, 2005). However, this situation does not seem to be the main cause for the low involvement in crowdsourcing platforms. Indeed, Lakhani & Panetta (2007) have advanced that companies are uncomfortable to share internal issues what may help us to better understand the reason of this low involvement.

All things considered, the level of openness that companies have in their core business is not followed in the crowdsourcing initiative. This does not mean that external non-employees are not involved in innovation, but instead that the involvement is made through others channels rather than using crowdsourcing initiatives common to employees and non-employees.

VI. CONCLUSIONS

Our results suggest that when companies have a good strategic crowdsourcing alignment, that causes a positive impact in the effectiveness of the implementation. Indeed, Tambe et al (2009) had already discussed the importance of a “right organization structure” as enabler of productivity (together with IT). In our research, we advocate that organization structure is part of the crowdsourcing strategy, which aligned with the initiative goals has a positive impact on implementation.

Jeppesen and Lakhani (2009) stated that a broadcast search could be much more effective in problem solving situations, where people that are out of the specie field of expertise could be more successful. Those contributions would be sustained in mechanisms created to integrate a broader scale involvement (O'Mahony & Ferraro, 2007). Other of the findings of this study supports that those mechanisms to involve and integrate employee's participation should be adapted to the company's reality.

The last conclusion of our study is associated to the way companies interact with external non-employees under a crowdsourcing initiative context. Alexy and Henkel (2010) suggested that the increasing boundaries permeability asks for organizational changes and new routines. Moreover, the level of openness has to be carefully managed considering that after a tipping point could have a negative impact on performance (Laursen & Salter, 2005).

Besides that benefit, the true is that in our study none of the companies designed crowdsourcing initiatives where employees and external stakeholders interact. Even though, the interaction with external non-employees occurs in the company's core activity. This could be justified with the less willingness to share some topics with external stakeholders (Lakhani & Panetta, 2007).

VI.1) Managerial implications

In this study we used the concrete cases of three companies that had implemented crowdsourcing initiatives, to analyze the fit between strategy and implementation. Some conclusions could help managers on future crowdsourcing implementations.

Firstly, companies should consider their goals before start a crowdsourcing initiative. The goals should be as much ambitious as the effort that the board is able to invest on it. More ambitious goals would ask a higher effort.

After defined the goals companies should create the organization mechanisms to pursue it, focusing particularly on the initiative management and the in mechanisms to involve the participants.

The initiative management depends of the goals defined but, in the limit for ambitious goals, company should have an autonomous department with their own resources.

On the other hand, involve participants is essential for the success of a crowdsourcing initiative. The tools used for that purpose should be customized to the target of the initiative, as in the cases analyzed during the study. Moreover, is expected that cases where an important part of the potential participants does not have access to technological tools would ask for a higher effort to involve, manage and retain the active users.

A strong alignment between goals and organizational mechanisms will make the implementation more effective.

VI.2) Limitations

The main limitation of this study is the reduced sample: in number of companies and participants per company. Ideally it would be desirable involve more companies from different fields of expertise. This fact would allow generate conclusions sustained in more cases.

Additionally, adding more participants per company would reduce the risk of the answers be biased by factors such as the position in the company or seniority.

Other of the limitations of our study is the weight of each dimension of the survey in the score generation. Considering the experience in the field and some empirical knowledge, could be possible assume that the strategic dimension assumes comparable relevance. However there is no academic literature to support this argument.

The last limitation with this study is related with the dimension of the survey, something that was commented by the crowdsourcing platform provider on their 3rd part role. Since the survey instrument is very comprehensive and the target of the survey were top-middle managers, some of them did not answer some questions, being difficult to distinguish if are because did not know the topic or because did not have enough time (an hour maximum) to fill the survey.

VI.3) Future Research

Despite this study, there is a lot to be researched on the crowdsourcing implementation topic.

After the design and application of the survey instrument, it would be interesting analyze it in a larger sample, that includes companies from different business sectors and with implementations in different stages. This would allow confirm some trends that were seen on this study and define a general implementation road map.

Moreover, it would be interesting apply the survey for periodical measures during some time (like one or two years, for example). This would give a more detailed view of the evolution of scores in each dimension, which allow a more informed decisions to meet the proposed goals with the crowdsourcing initiative.

At other level, attention should be paid to the crowdsourcing management. It could be interesting a more depth analysis of the role of the project champion and project day-to-day leader, on an attempt to gain a better understanding of the way as they interact and their influence on the diffusion of the initiative.

Another topic related with this subject and that would be a possibility in future research, is gain a better understanding of the impact in the corporate culture and in the relation with external non-employees.

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Company Data

Data Available in the Company's Website

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Exhibit 1 – Project Presentation for the Crowdsourcing Platform Provider

Caro xxx,

Sou aluno do Mestrado em Gestão da Universidade Católica Portuguesa, e estou de momento a realizar a minha tese de mestrado sobre o tema crowdsourcing a nível empresarial. A tese está a ser tutorada pelo Professor Andrei Villarroel, presentemente no MIT.

O objectivo do meu projecto é analisar o sucesso da implementação do crowdsourcing nas empresas, em 4 dimensões: Estratégica, Organizacional, Processo e Tecnológica.

Assim sendo, gostaria de saber da possibilidade de me pôr em contacto com alguns dos clientes da xxx, a fim de participarem neste estudo.

Desde já agradeço a sua disponibilidade.

On February 18TH

Exhibit 2 – Companies Study Description



Master of Science Thesis

Corporate Crowdsourcing Assessment Study

Equipa de investigação:

Prof. Andrei Villarroel, PhD, Investigador Responsável

Dr. Joao Tiago Calqueiro, Candidato ao Master of Science

Dra. Filipa Reis, Master of Science, Assistente de Investigação

Esta investigação é o sujeito da tese de Mestrado do Dr. João Tiago Calqueiro, supervisionada pelo Prof. Andrei Villarroel, Católica Lisbon School of Business and Economics e MIT Sloan School of Management.

1) Objectivos

O objectivo deste projecto é analisar as características organizacionais da implementação do crowdsourcing nas empresas.

O valor para a empresa participante no estudo será a avaliação do “fit” da sua implementação de crowdsourcing relativamente a outras empresas.

Concluído o projecto, os resultados anónimos serão publicados no documento final da tese disponível na biblioteca da Universidade Católica Portuguesa.

2) Metodologia

Através de uma parceria com xxx, este trabalho será desenvolvido junto dos clientes da mesma, inseridos em diferentes sectores de actividade económica.

A metodologia seguida divide-se em duas fases:

- a. Série de entrevistas a fim de conhecer o modo como a organização se posiciona perante a implementação de crowdsourcing.
[4 semanas]
- b. Desenvolvimento de um inquérito on-line dirigido a uma amostra dos colaboradores da empresa em diferentes níveis da hierarquia.

[1 semana]

IMPORTANTE: Toda informação recebida, sob forma de entrevista ou inquérito, será tratada de forma totalmente confidencial. Apenas os resultados anónimos da análise serão apresentados no resumo final da tese.

3) Conclusões

O trabalho desenvolvido servirá para dar a conhecer algumas das variáveis organizacionais que impactam o sucesso da implementação do crowdsourcing.

A colaboração da empresa neste projecto de investigação dar-lhe-á acesso privilegiado às conclusões do estudo, as quais serão apresentadas numa sessão especial dedicada para a empresa participante.

Agradecemos a valiosa participação da sua Empresa no nosso estudo.

Em representação da equipa de investigação,

João Tiago Calqueiro
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Exhibit 3 – Guide used during interviews

Católica Lisbon
School of Business and Economics
Corporate Crowdsourcing – Master Thesis

Structure for the interviews:

1. Introduction

- a. Goal of the project
- b. Metrics to achieve the goal
- c. Next Steps

2. The four dimensions

- a. Strategy
 - i. Goal of the company with crowdsourcing
 - ii. “Management” of the “crowdsourcing – different levels
 - iii. Extension- one or all
 - iv. How is communicated
- b. Organizational
 - i. Department communication (internal and external)
 - ii. Structure – around products or clients
 - iii. Training
 - iv. Involvement in the community (markets and/or forums)
- c. Process
 - i. Role of crowdsourcing in the NPD
 - ii. Metrics for measure involvement, satisfaction and productivity
 - iii. Workflows - From idea submit to be implement
- d. Technology
 - i. Type of Technology and Availability
 - ii. How involve non – technology users (Ex: Continente)
 - iii. Data analysis – from the users participation

3. Conclusion

- a. Next Steps – one more meeting
- b. Questions
- c. Requirements to run an online survey for some managers

Fundamental to understand:

- Company’s Organizational Structure at the top-level: Functional, Product/Customer, Matrix, Front-back
- Hierarchical levels involved in the crowdsourcing implementation
- Specific for one department or all
- Organizational Management of crowdsourcing (One specific area responsible?)
- Metrics to measure the success of the implementation

Exhibit 4- Survey Dimensions description

IV.1.1) Strategic Dimension

This dimension involves a relevant part of the decision making process: the decision to move forward and start a crowdsourcing initiative. In the beginning it is important to understand the role of directors' board in this stage, their involvement in the day-to-day of the initiative but also what are the company goals either with the initiative.

Other of the important sub-dimensions associated with the top-level executives that have to be considered, are the effectiveness of their effort to involve the company employees and/or other stakeholders.

Since this survey was answered by participants in different positions and departments inside companies, it allows a transversal analyze of the goals alignment among departments, but also a deeper understanding of how the initiative is perceived by persons in different departments.

In conclusion, the strategic dimension should allows a deeper understanding about what are the companies objectives with the crowdsourcing initiative and how they are aligned with company's goals, supported by the board of directors day-to-day activity.

IV.1.2) Organizational Dimension

On this dimension are included all the issues associated with the company structure and their employees, being closely linked with strategic dimension.

Inside of the company's structure sub-topic, the aim with the survey is to obtain information related to the day-to-day activity of the firm (like the level of communication among departments, for example) or to know what are the functional areas involved in the initiative. One of the most important information in this topic it is related to the way the initiative is managed, obtaining inputs about who manages it (the company has a dedicated department or is the innovation/R&D department?) and the number of resources allocated (exclusively?) to the initiative.

The other sub-topic is related to employees. Since general training is mandatory by law¹⁰, crowdsourcing initiative's training is something more customized and available to the selected employees. The idea is to understand the frequency and the target of the crowdsourcing related training, reinforcing the idea presented before of the parallelism between general and pro-initiative actions. Despite the training, it is essential also to focus on what are the motivational factors that justify employees participation, their feelings about the initiative and, eventually, through the interaction with external non-employees.

¹⁰ <http://www.iapmei.pt/iapmei-leg-03.php?lei=2475>

Concluded the organizational dimension, it should be possible to name who managed the initiative and how frequent the contact of the general employees with crowdsourcing are, based on training and on communication.

IV.1.3) Process Dimension

The aim of this dimension is to understand the current procedures of the company. Despite being analyzed on the same perspective and focusing in the interaction with external stakeholders, it is possible to distinguish two main topics inside the process dimension: the part related to their core business practices and the one associated with the crowdsourcing initiative. Associated with the core activity operations are the new product development's (NPD) phase and the outsourcing of operations. Generating inputs about the level of openness of the company to external stakeholders could be possible understand the level of openness of the company and make a parallelism with what happens in the crowdsourcing initiative.

When a company has a crowdsourcing initiative, it could create mechanisms to control and monitor the activity, through an internal structure or supported by an external third party. Because of that, companies were invited to share which metrics they use, if they use it, and also to give some data associated to the penetration of the initiative (percentage of employees that participate in the crowdsourcing initiative) in the company or the evolution of the number of active users.

If the survey is applicable to companies with crowdsourcing initiatives, those respondent companies could be in different stages of implementations, having initiatives with less maturity. Because of that, it is not expectable that all the companies have metrics or data about their initiatives, something that is previewed in the variety of possible answers offered.

Finished the process dimension, it should be possible to understand if the company monitoring, the crowdsourcing initiative or their current level of openness to external entities through NPD, outsourcing or in the crowdsourcing initiative.

IV.1.4) Technological Dimension

In the last dimension, where it is possible to highlight two subtopics: the first one related to the state-of-art of the technology that the company uses in their normal activity as well as in the initiative; the second one about the frequency and focus of the crowdsourcing data, or how is defined the budget for innovation.

Focusing on the company's practices, the objective is to understand which are the current practices of data sharing in the company. Moreover, it also be interesting obtain inputs that allow perceiving which tools are most used and which are considered more important for innovation

diffusion. Inside both dimensions, the idea was to distinguish among tools used to communicate internally and with external non-employees, generally and with an innovation purposes.

In the dimension's process it was asked about the type of data that companies are looking for the crowdsourcing initiative. In this section the focus it is in the frequency that the data is treated and processed in information to support the decision making process. Not only how often that happens but also what is the focus (individual performance or instead some more generic). Other sub-topic inside of the crowdsourcing issue is the way that the companies defined their budget for crowdsourcing: if they have an autonomous one or, instead are inserted in a broader range being part of the R&D or marketing budgets.

Since not all the crowdsourcing initiatives are supported on technological tools, the survey was designed in a way that other types of tools like brainstorm sessions or suggestion boxes could be seen as crowdsourcing tools.

At the end of the technological dimension it should be possible to distinguish the most effective tools for innovation, understanding how it is defined the company's budget for innovation or the focus of data analysis. The value added in this dimension is the possibility of making the comparison between company current technological practices on their core business and if in any way the crowdsourcing change it.

Exhibit 5 – Survey Research Schedule

The kick off of the study was done with the crowdsourcing supplier (Phase 0), in two face-to-face meetings.

In the first one (February 17th) the project was presented with the purpose of convincing a crowdsourcing platform provider to take part in the study and to agree which companies should constitute the sample of this project.

After agreeing, it was scheduled another meeting (February 23rd) to present the crowdsourcing platform provider's portfolio and to develop some basic technical aspects related to the platforms of each of the sampled companies, been analyzed a concrete case of a non-sampled company.

Finished phase 0, it was established the first contact with the companies, trying to convince them to participate (Phase 1). The crowdsourcing supplier had made the link between the company and the research time, through the exchanging of e-mails.

We contacted six companies, but two of them had not accepted the approach. With the remaining four it was scheduled a first round of interviews (from March 9th to April 4th) to obtain inputs about organizational issues and to understand which type of crowdsourcing

module the company had. These inputs were relevant for the survey design, since that their experience as users gives to them a better knowledge of what are the relevant dimensions in crowdsourcing implementation. The sample includes companies from different business sectors because of that it was necessary a special attention to that fact during the survey design, trying to avoid biased or limit survey applications to some business areas.

From all the companies interviewed in Phase 1, two were personal meetings lasting, on average, one hour each.

The remaining interviews were supported by technology, in one case via Skype, whereas the company headquarter is out of Lisbon, far away from the place where the study was conducted.

In the other case, the company operates exclusively in the South American market, reason why all the contacts were by telephone and e-mail.

The second round of interviews was made informally (from May 2nd to May 6th) with all the companies that are part of the sample – Phase 2. This second round had the objective to refine the draft version of the survey and to define which job titles should be the target of this study, the managers/directors that should participate and from which areas of the company.



Graph - Survey Design Process

This stage gave also the possibility to confirm some information obtained during phase 0 and 1, such as understanding the way how companies are organized and how manages the initiative

All the 2nd rounds of interviews with the companies were made by e-mail, with the same contact of phase 1, persons with responsibilities in the crowdsourcing initiative or in the innovation area.

Concluded the survey draft design, it was made a third round of interviews with the crowdsourcing platform provider, using their double role in this project: in one side promoting the interaction with the companies but at the same time working as a third part during the survey design and testing phases.

The aim of this third phase was to use the third part of the role of the crowdsourcing supplier; their experience in the field for technical aspects but also their broader understanding of what companies are looking for when launching a crowdsourcing initiative.

This stage, had involved two meetings to refine the survey (May 11th and June 6th). Between the first and second meetings, the crowdsourcing software provider was called to give feedback about new trends on communication tools or different metrics that are available in their software to measure participation in a crowdsourcing initiative.

With the feedback received the survey was adjusted in some dimensions. The main concerning from the crowdsourcing supplier side was the dimension of the survey, believing that could be too much exhaustive.

After the feedback, the survey was tested in the field using 3rd part elements, which are not so familiar with the crowdsourcing topic (Phase 4). This phase was important to test if all the concepts were clear enough in a way that anyone without background or familiarity with the topic could understand the questions and their meaning. During this phase, it was made some changes in the glossary, trying to use a simpler and non-technical language.



Graph - Survey Testing and Application

Finished phase 4, the survey was considered ready to be answered by the companies, capturing all the relevant dimensions to meet the purpose of this dissertation. Phase 5 started with the survey.

For two of the companies the survey was sent by e-mail to the contact inside the company that follows up to the 5 persons agreed on phase 2. Those e-mails were sent on June 10th and June 14th.

The target of the survey for this study was defined on phase 2, where was decided to focus in the top management.

Considering this option, it was decided obtain inputs from three different persons inside the department that manages the crowdsourcing initiative (could be from the innovation department or from an autonomous department, depending on the company organization), including the project champion (usually a board member) and two managers of the department. Seeing that one of the study goals was a better understanding of the main drivers for a crowdsourcing initiative implementation, we also interviewed persons that are not so familiar

with the crowdsourcing initiative. This decision was made on an attempt to verify if their perceptions are aligned with the purpose of the initiative and if fit with the remaining interviewed managers, choosing managers or directors of other functional areas (e.g: a product manager, a customer manager or a HR director).

From the four companies that were asked to participate, one of them did not answer to the invitation after taking part on the survey design. The remaining three of them had participated with 4, 3 and 1 elements, respectively.

In one of the companies (Company A) the four persons that had answered, made it until July 8th. In Company B was obtained three answers, completed until June 22nd, while in Company C the only answer was received until July 22nd.

Exhibit 6 - Example of e-mail sent to the companies (Phase 2)

Boa tarde xxx,

Desde a última vez que falámos, levei a cabo uma série de entrevistas com outras empresas. Simultaneamente, desenvolvi o survey que vai permitir obter os inputs necessário à conclusão da tese.

Posto isto, gostaria de saber duas questões:

- Vê algum problema no facto de o survey ser em Inglês?
- O target será a gestão de topo da empresa. Serão apenas 4/5 pessoas... Pensei no Dr xxx, em si, no administrador com o pelouro da inovação, em mais alguém que trabalhe directamente consigo e, por último, uma director de outra área da empresa (exemplo: xxx).

Que lhe parece? Fico a aguardar o seu feedback

Mais uma vez muito obrigado pela sua disponibilidade

On April 14th

Exhibit 7 – Example of e-mail sent for some survey participants (Phase 5)

Caro xxx,

Numa parceria com a xxx, estou neste momento a desenvolver a minha tese de mestrado que **procura estudar casos de sucesso de implementação de crowdsourcing.**

Este trabalho está a ser feito por uma equipa orientada pelo Professor Andrei Villarroel (Professor no MIT, USA) e terá como base um survey desenvolvido dentro das empresas.

O output deste trabalho permitirá comparar a posição da xxx face a outras empresas que participam neste projecto, podendo permitir gerar valor através de uma análise relativa específica ao vosso caso.

O target deste survey serão 4/5 pessoas da empresas, sendo que 3 devem ser ligadas à iniciativa de crowdsourcing/inação, e as restantes a outras áreas da empresa (comunicação e RH como tínhamos falado).

O survey não procura ser anónimo, sendo que o valor acrescentado que trará advém da capacidade das pessoas darem resposta às questões e de uma futura interacção com elas. Apesar de ser bastante completo, cada participante poderá deixar por preencher as questões em que não se sinta confortável ou desconheça a resposta.

O survey está disponível no seguinte link:

- <https://www.surveymonkey.com/s/crwdsdissertation>

O survey estará no ar durante uma semana, pelo que peço a maior brevidade nas vossas respostas

Mais uma vez, obrigado pela vossa disponibilidade

Com os meus melhores cumprimentos,

João Tiago Calqueiro

E-mail: joaotiagocalqueiro@gmail.com

Skype ID: jtcalqueiro

On June 10th

Exhibit 8- Score Generation

The survey 63 questions were divided in four different dimensions and each of them should be analyzed separately and all-included. The score of each dimension should be comparable as well as the scores for crowdsourcing strategy (strategic and organizational dimensions) and crowdsourcing implementation (process and technologic dimensions).

The questions scores will vary according to the type of question.

For the questions with a level-measurement type, the score is the simple average of the answers to that sentence (1-5 Likert Scale questions).

In the multiple choice questions it was created a qualitative rank, where the score is higher for the options that reflect higher levels of openness to external or where the crowdsourcing initiative has a broader influence in the company.

For the dichotomous answers the score vary between 0 and 1. When the score is one the answer has a positive impact over the crowdsourcing initiative.

The final score per dimension is obtained by adding the score of the respective closed-questions and then divided by the maximum possible points in that dimension. The result is presented in percentage.

The final score for company is a simple average of the scores in the four dimensions, since all the dimensions have the same relative weight.

Despite do not be scored, open questions are more informative and will be used to support the data-analysis.

Exhibit 9 – Crowdsourcing Survey (Some Questions)

| Question nr | Dimension | Question Type | Question |
|-------------|----------------|----------------------------------|--|
| 7 | Strategic | Multiple Choice (All that apply) | The board of the company sees the initiative as a way to: |
| 8 | Strategic | Multiple Choice (All that apply) | The board of directors gets involved in the... |
| 9 | Strategic | Multiple Choice (One option) | The crowdsourcing initiative is managed by: |
| 12 | Strategic | Multiple Choice (One option) | The crowdsourcing initiative involves... |
| 13 | Strategic | 1-5 Likert | The crowdsourcing initiative has change the way company perceives innovation. |
| 13 | Strategic | 1-5 Likert | The crowdsourcing initiative has changes positively the company's culture. |
| 18 | Organizational | 1-5 Likert | External non-employees are an important source of innovation for the company. |
| 21 | Organizational | Multiple Choice (One option) | How many people run the crowdsourcing initiative? |
| 26 | Organizational | Multiple Choice (One option) | How much time (on average, per week) are the employees expected to spend on the crowdsourcing platform? |
| 27 | Organizational | Multiple Choice (One option) | How much time (on average, per week) do the employees actually spend on the crowdsourcing platform? |
| 32 | Process | 1-5 Likert | The company outsources the development of new technologies. |
| 32 | Process | 1-5 Likert | The company outsources the development of new products. |
| 32 | Process | 1-5 Likert | The R&D department interacts with external non-employees. |
| 32 | Process | 1-5 Likert | NPD is performed exclusively by external non-employees. |
| 36 | Process | Multiple Choice (All that apply) | External non-employees are involved in: |
| 47 | Technological | Multiple Choice (Choose up to 3) | Which of the following technologies is the most used among the company's employees? |
| 48 | Technological | Multiple Choice (Choose up to 3) | Which of the following technologies is the most used with external non-employees? |
| 50 | Technological | Multiple Choice (Choose up to 3) | Which of the following do you consider the most important tools to promote innovation with external non-employees? |

Exhibit 10 – Multiple Choice Score Conversion

| Question Nr | Possible answers | | | | | |
|--------------|--------------------------|------------------------------|---------------------------|-------------------------------|------------------------|----------------------|
| 7 | Costs | Revenues | Culture | | | |
| Score | 1 | 2 | 3 | | | |
| 8 | Creation | Selection | Implementation | Recognition | NK/NA | |
| Score | 4 | 2 | 3 | 1 | 0 | |
| 9 | R&D/Innovation | Marketing | Dedicated | NK/NA | | |
| Score | 2 | 1 | 3 | 0 | | |
| 12 | One division | Some divisions | All the divisions | NK/NA | | |
| Score | 1 | 2 | 3 | 0 | | |
| 21 | 0 Persons | 1-5 | 6-11 | 11 or more | NK/NA | |
| Score | 0 | 1 | 2 | 3 | 0 | |
| 26 | 0 hours | Less than an hour | 1-5 hours | 5-10 hours | More than 10 hours | NK/NA |
| Score | 0 | 1 | 2 | 3 | 4 | 0 |
| 27 | 0 hours | Less than an hour | 1-5 hours | 5-10 hours | More than 10 hours | NK/NA |
| Score | 0 | 1 | 2 | 3 | 4 | 0 |
| 36 | Idea Creation | Choice of ideas to implement | Implementation of ideas | Supervision of implementation | NA | |
| Score | 2 | 1 | 3 | 4 | 0 | |
| 47 | Telephone Suggestion Box | Fax E-mail | IF IM | Social Network Blog | Wiki Twitter-like | |
| Score | 1 | 2 | 3 | 3 | 3 | |
| 48 | Telephone Suggestion Box | Fax E-mail | IF IM | Social Network Blog | Wiki Twitter-like | NK/NA |
| Score | 1 | 2 | 3 | 3 | 3 | 0 |
| 50 | Telephone Suggestion Box | Fax E-mail | Workshop Brainstorming | IF IM | Social Network Blog | Wiki Twitter-like |
| Score | 1 | 2 | 2 | 3 | 3 | 3 |

Note: Questions nr 13, 18, 32 and 57 are 1-5 Likert Scale questions. The score is equal to the answer

Exhibit 11 a) – Scores per Company (all included)

| | Crowdsourcing Strategy | Crowdsourcing Implementation |
|------------------|-------------------------------|-------------------------------------|
| Company A | 72,13% | 63,33% |
| Company B | 60,73% | 46,76% |
| Company C | 59,24% | 53,48% |

Exhibit 11 b) – Scores per Company (Project Leaders Only)

| | Crowdsourcing Strategy | Crowdsourcing Implementation |
|------------------|-------------------------------|-------------------------------------|
| Company A | 73,56% | 66,84% |
| Company B | 67,01% | 57,23% |
| Company C | 59,24% | 53,48% |

Exhibit 12 – Metrics related information

All the companies present in the study collect data about the initiative, which is obtained and analyzed by the same department that manages the day-to-day activity. However, companies do not use the data to create metrics, reflected on the score that the companies had on these questions.

A score close to 100% on both questions means that the company uses detailed metrics and not only the absolute values related to the participation, which could be provided by the platform supplier.

The metrics used are developed by the crowdsourcing software suppliers, which are distributed on “weekly reports and on some company briefings” [E-2].

Despite the fact that software crowdsourcing suppliers provide data and metrics, the true is that these metrics are “not enough” [A-1] to meet the company needs. However when A-1 was invited to share the metrics that they use, the answer was, “We use a lot the feedback that we receive from e-mail”.

Company B scores low on metrics questions since they just look to the “main indicators that our crowdsourcing supplier provides to us” [B-1].

Despite has a different module Company C does not use any metric to measure satisfaction or productivity. This fact is justified by the “low quality of the ideas” that company tries to avoid [C-1].

In conclusion, the results go in the same direction with the participants giving low attention to metrics. Indeed, on A-1’s opinion, “we do not look too much for retention and satisfaction metrics” being something “that is a good idea and that we have to search for”.

| Question nr | Dimension | Question Type | Question | Company A Score | Company B Score | Company C Score |
|-------------|---------------|---|--|-----------------|-----------------|-----------------|
| 43 | Process | Multiple Choice (Choose up to 2) | How does the company measure community productivity? | 59,22% | 38,89% | 0% |
| 44 | Process | Multiple Choice (Choose up to 2) | How does the company measure community satisfaction? | 41,75% | 12,5% | 0% |
| 52 | Technological | Multiple Choice (Choose all that apply) | The goal of having community related data is to: | 60% | 5% | 30% |