PhD THESIS

**“A model for the analysis of the impact of crowdsourcing
activities on organizations”**

Alberto Martinez

September 2018

Thesis Supervisors:

Dra. Mercedes Grijalvo

Dr. Miguel Palacios

Executive Summary

The fast development in the last years of the information and communication technologies has had its influence in the organizations and their processes. Among the changes experienced, a new framework has appeared with the evolution of the use of Internet as communication tool both for organizations and individual users and the appearance of the web 2.0, which has provided a new way of interaction among them.

This evolving environment has established new means of cooperation among the different players in the society, in the relationships established between them, and a new type of economic relations among participants. In this context emerges the collaborative economy or sharing economy (Lessig, 2008) characterized by on-line transactions among different players (organizations, companies, consumers, individuals, institutions, etc.).

One of the features of this new economy is what is referred to as crowdsourcing, a term coined by Howe (2006) as “simply defined, crowdsourcing represents the act of a company or institution taking a function once performed by employees and outsourcing it to an undefined (and generally large) network of people in the form of an open call”. While this approach for the outsourcing of processes to a large crowd had existed and been used since the eighteen century (Surowiecki, 2004), the fast development of the information and communication technologies has facilitated the spread of this tool for organizations to integrate the crowd in their processes.

Since then, many definitions of this concept have been provided (Estellés-Arolas and González-Ladrón-De-Guevara, 2012) and many models have been developed to explain the success cases and their characteristics (Geiger et al., 2011, Hosseini et al.,

2014, Hossain and Kauranen, 2015). Additionally, this new process is facilitating the creation of new organizations.

In the organization and management field some authors have even pointed out organizational theories that could provide a frame for crowdsourcing, as the behavioral and the evolutionary theories (Afuah and Tucci, 2012) or the knowledge-based theory (Jeppesen and Lakhani, 2010).

One aspect that is lacking in all academic literature on this field is the analysis of the impact of these new models on the organizations. In the review of the sources on this approach it has been identified the existence of missing aspects regarding the relationship between crowdsourcing activities and organizations and its functioning. Filling this gap is the purpose of this research.

The objective of this thesis is the proposal of a model that provides an approach for the analysis of the impact that crowdsourcing activities have on organizations and the institutional change that they bring on to them.

In the review of the literature on organizations in these evolving environments, some conceptual work is found on the creation of new organizational forms but some areas are yet in need of development of the research. The work of several authors (Greenwood and Suddaby, 2006; Rao et al., 2000), identify the existence of structures, practices and underlying values in organizations which give them a coherence that is complemented by the need of a legitimacy in the institutional context. These elements identified as required for the construction of organization are in line with the work of Tracey et al. (2011), who identify that in order to build a model of institutional logics it is essential to conjugate work at three institutional levels, which are the organizational

levels where this thesis identifies that there can be an impact of crowdsourcing activities on organizations.

Based on this, an initial framework model is first presented where it is identified that the impact on organizations occurs at three different levels:

- The macro-level (the society level)
- The meso-level (the organizational level)
- The micro-level (the processes/individual level).

Afterwards a detailed model is developed to provide a deeper analysis of the relationship between crowdsourcing activities and organizations. The crowdsourcing activities are analyzed in detail through the different models existing in the literature, that provide characteristics for the classification of the crowdsourcing initiatives, which are identified as *dimensions* of crowdsourcing models. The impact on organizations is analyzed in the three levels indicated through the *elements* in which those three levels are divided to capture the crowdsourcing processes.

The link that connects the two areas in the model is established between the dimensions and the elements. Thus the model included in this research provides a framework that can integrate further crowdsourcing models through the identification of their dimensions and their link to the different elements included.

Finally, the application of the approach is validated with both a qualitative and a quantitative process:

- The qualitative process consisting on the analysis of a case of the evolution of crowdsourcing initiatives of a player in the Spanish banking industry: the BBVA bank

- The quantitative process consisting on a survey carried out among scholars and practitioners linked to crowdsourcing or open innovation areas.

Through the development of the initial model and the detailed model, and the validation in a case study and a survey, this research provides a new framework for the analysis of crowdsourcing initiatives and their impact on organizations.

Resumen Ejecutivo

El rápido desarrollo en los últimos años de las tecnologías de la información y la comunicación ha tenido su influencia sobre las organizaciones y sus procesos. La evolución en el uso de internet como herramienta de comunicación tanto para organizaciones como para los usuarios individuales y la aparición de la web 2.0, que ha proporcionado una nueva forma de interacción entre ambos, que han facilitado la aparición de un nuevo marco.

Este entorno cambiante ha establecido unas nuevas formas de cooperación entre los diferentes actores de la sociedad, en las relaciones que se establecen entre ellos y un nuevo modelo de relaciones económicas entre los participantes. Es en este contexto que surge la economía colaborativa (Lessig, 2008) que se caracteriza por las transacciones on-line entre los distintos actores (organizaciones, empresas, consumidores, individuos, instituciones, etc.).

Una de las características de esta nueva economía es lo que se conoce como crowdsourcing, un término acuñado por Howe (2006) como “simplemente definido, crowdsourcing representa el acto de una empresa o institución que toma una función anteriormente por su empleados y la externaliza a una red de personas indefinida (y generalmente grande) a través de una convocatoria abierta”. Mientras este enfoque para la externalización de procesos a una gran multitud había existido y sido usado desde el siglo XVIII (Surowiecki, 2004), el rápido desarrollo de las tecnologías de la información y la comunicación ha facilitado la extensión de esta herramienta, que permite a las organizaciones integrar a la multitud en sus procesos.

Desde entonces, muchos autores han proporcionado definiciones de ese concepto (Estellés-Arolas and González-Ladrón-De-Guevara, 2012). También han

desarrollado diferentes modelos para explicar los casos de éxito y sus características. (Geiger et al., 2011, Hosseini et al., 2014, Hossain and Kauranen, 2015). Una consecuencia mas ha sido que estos procesos emergentes han facilitado la creación de nuevas organizaciones.

Incluso en el campo de la organización y gestión varios autores han identificado teorías de la organización que pueden servir de marco para el crowdsourcing, las teorías del comportamiento y evolutiva (Afuah and Tucci, 2012) o la teoría basada en el conocimiento (Jeppesen and Lakhani, 2010).

Una perspectiva que se hecha en falta en toda la literatura academica de este campo es el análisis del impacto sobre estos nuevos modelos organizativos. A lo largo del proceso de revision de las correspondientes fuentes para este enfoque que surge, se ha identificado la ausencia de aspectos que referents a la relación entre las actividades de crowdsourcing y las organizaciones y su funcionamiento. Rellenar ese hueco es el proposito de esta investigación.

El objetivo que se fija esta tesis es la propuesta de un modelo que proporcione un enfoque para el análisis del impacto que las actividades de crowdsourcing tienen sobre las organizaciones y los cambios institucionales que traen con ellas.

En la revisión de la literatura de las organizaciones, dentro de este entorno cambiante, se han encontrado una serie de trabajos conceptuales sobre la creación de nuevas formas organizacionales si bien algunas áreas necesitan aun desarrollarse.

El trabajo de diversos autores (Rao et al., 2000; Greenwood and Suddaby, 2006) identifica la existencia de estructuras, practicas e incluso valores subyacentes en la organizaciones, que les confiere una coherencia que se complementa con la necesidad

de una legitimidad en el contexto constitucional. La identificación de estos elementos como requisitos para la construcción de organizaciones esta en línea con el trabajo de Tracey et al. (2011), que identifica la necesidad de conjugar el trabajo a tres niveles para construir un modelo de lógica institucional. Estos son los tres niveles que se identifican en la tesis a los que pueden verse afectadas las organizaciones por las actividades de crowdsourcing.

Basado en todo ello se presenta un primer modelo básico donde se identifica que el impacto sobre las organizaciones ocurre a tres niveles diferentes:

- Nivel macro (a nivel de la sociedad)
- Nivel meso (a nivel de la organización)
- Nivel micro (a nivel individual y de procesos)

Posteriormente se desarrolla un modelo detallado para proporcionar un análisis mas profundo de la relación entre las actividades de crowdsourcing y las organizaciones. Las actividades de crowdsourcing son analizadas en detalle a través de los diferentes modelos existentes en la literatura, y que proporcionan características para la clasificación de estas actividades, que se identificarán como *dimensiones* de los modelos de crowdsourcing. El impacto sobre la organizaciones se analiza en los tres niveles identificados a través de los *elementos* en los que se dividen dichos niveles, para recoger los procesos de crowdsourcing .

La conexión que conecta estas dos áreas del modelo se establece entre las dimensiones y los elementos. Por ello, el modelo incluido en esta investigación proporciona un marco que sirve para integrar modelos de crowdsourcing adicionales,

a través de las dimensiones que proponga y su conexión con los diferentes elementos incluidos.

Finalmente, la aplicación de este enfoque es válida tanto a través de un proceso cualitativo como cuantitativo:

- El proceso cualitativo consiste en el análisis de un caso sobre la evolución de las actividades de crowdsourcing de uno de los actores principales en la industria bancaria española: el banco BBVA
- El proceso cuantitativo consiste en una encuesta realizada entre académicos y profesionales relacionados con entornos de crowdsourcing o de innovación abierta

A través del desarrollo del modelo básico inicial y del modelo detallado, junto con la validación con un caso y una encuesta, esta investigación proporciona un nuevo marco para el análisis de las iniciativas de crowdsourcing y de su impacto sobre las organizaciones.

Acknowledgements

The completion of the work of this thesis is a moment of remembering and thanking all the people that has had a part in it at different times, as there has been many of them. From my classmates and professors in the first courses of Doctorate studies at Carlos III University, to my colleagues at work at ESCP Europe that have encouraged me in my work, the support of my school directors, the ideas and collaborations of fellow researchers at UPM, including the deceased Francisco Sanchez, a big supporter of collaborative economy, and Arsalan Shah with an eagerness to provide an edge in the publications, and many more that have cared about me in this path.

It is also a time to warmly thank my thesis supervisors, Mercedes Grijalvo and Miguel Palacios, for their support, rigorousness and perseverance, and for dedicating their time to care about my work in the way that I could progress and providing all I needed to complete it.

Finally, the most important acknowledgement is for my close ones, as they have been those most suffering the time and dedication needed to complete my work, but they have also been the ones that have supported me most in the whole process. It is a work dedicated to them, my wife Virginia, and my children Alejandra, Maria and Pedro. They are part of me, and an inspiration I have, so this work is also theirs.

Contents

Executive Summary	I
Resumen Ejecutivo.....	VI
Acknowledgements	XI
Contents.....	XIII
List of Figures.....	XVI
List of Tables	XVII
1. Introduction. Objectives of the study. Document Structure.....	1
1.1. Introduction	1
1.2. Objectives of the study.....	3
1.3. Structure of the document.....	5
2. Crowdsourcing and organizational forms	7
2.1. Definitions and uses of crowdsourcing	7
2.2. Knowledge gap and research objectives.....	11
3. Methodology.....	13
3.1. Model proposal	15
3.1.1. Establishing the grounds for proposing a model	17
3.1.2. Proposing the model	20
3.2. Model validation.....	22
3.2.1. Qualitative validation.....	23
3.2.2. Quantitative validation.....	24
4. Results: Framework model.....	26
4.1. Identification and review of existing crowdsourcing activities.....	26
4.1.1. Crowdsourcing as a tool for solving problems.....	30
4.1.2. Crowdsourcing as a new paradigm for organizational learning.....	32
4.1.3. Crowdsourcing as a form of open innovation	33
4.1.4. Use of crowdsourcing for new product development.....	35
4.1.5. Use of crowdsourcing in collaborative initiatives.....	36
4.2. Organizational levels	37
4.3. Development of the model	40
5. Results: Detailed model	43
5.1. Crowdsourcing models and taxonomies. Dimensions for analysis	44
5.1.1. Theoretical foundations.....	45

5.1.2	Elements of crowdsourcing activities.....	49
5.1.2.1.	Geiger, Seedorf, Schulze, Nickerson, and Schader (2011).....	50
5.1.2.2.	Estellés-Arolas and González-Ladrón-de-Guevara (2012);	54
5.1.2.3.	Brabham (2013)	55
5.1.2.4.	Saxton, Oh and Kishore (2013)	56
5.1.2.5.	Hosseini , Phalp, Taylor and Ali (2014) / Hosseini, Shahri, Phalp, Taylor and Ali (2015).....	58
5.1.2.6.	Nakatsu, Grossman and Iacovou (2014)	61
5.1.2.7.	Prpić, Shukla, Kietzmann and McCarthy (2015)	64
5.1.2.8.	Kohler (2015)	65
5.1.2.9.	Models from other authors.....	68
5.1.3.	Objectives of crowdsourcing activities	71
5.1.3.1.	Brabham (2013)	72
5.1.3.2.	Hossain and Kauranen (2015)	74
5.1.3.3.	Other authors.....	75
5.1.3.4.	Palacios, Martinez-Corral, Nisar and Grijalvo (2016).....	77
5.2.	Analysis of crowdsourcing dimensions: Detailed model.....	78
5.2.1.	Basis for the detailed model for crowdsourcing analysis	78
5.2.2.	Analysis and classification of dimensions.....	81
5.2.2.1.	Dimensions per elements and organizational level.....	82
5.2.2.2.	Elements of organizational levels	85
5.2.2.3.	Correspondence between dimensions and elements of organizational levels	91
5.2.3.	Detailed model proposal.....	95
6.	Case-based qualitative validation	97
6.1.	The BBVA case: Summary of case study and analysis	97
6.2.	BBVA crowdsourcing activities	98
6.2.1.	Open Talent.....	99
6.2.2.	Innova Challenge.....	102
6.2.3.	Beta Testers	103
6.2.4.	Future activities of BBVA.....	103
6.3.	Analysis of the gaps and validation of the model	104
6.3.1.	Covering the gaps with missing elements from the model	104
6.3.2.	Global analysis of the BBVA case	106
7.	Expert quantitative validation.....	109
7.1.	Description and design of the survey	110
7.2.	General results of the survey.....	111
7.2.1.	Profile of respondents	112
7.2.2.	Validity of the approach provided by the model	112
7.2.3.	Elements of organizational levels	113
7.2.4.	Linking elements and dimensions	114
7.3.	Analysis of results per profiles of respondents.....	114
7.3.1.	Profile of respondents.....	114
7.3.2.	Validity of the approach provided by the model	115
7.3.3.	Elements of organizational levels	115

7.3.4. Linking elements and dimensions	116
7. 4. Conclusions	116
8. Conclusions.....	118
8.1. Main conclusions.....	118
8.2. Final conclusion.....	121
9. References.....	123
10. Annexes	136
Annex I – Article	1
Annex II – Article	1
Annex III – Interview to BBVA Innovation Manager	1
Annex IV – Survey	1
A-IV. 1. Questions of the survey	3
A-IV. 2. Answers to the survey.....	16

List of Figures

- Figure 1 – Phases of the Research and Methodologies used (Page 15)
- Figure 2 – Framework model (Page 42)
- Figure 3 – Prototypical crowdsourcing approach, Geiger et al. (2011) (Page 51)
- Figure 4 – A taxonomy of crowdsourcing based on task characteristics, Nakatsu et al. (2014) (Page 62)
- Figure 5 – Crowdsourcing alternatives, Prpić et al. (2015) (Page 64)
- Figure 6 – Solver engagement model, Garcia Martinez (2015) (Page 65)
- Figure 7– Degrees of employing non-employees in organizational processes. Ford et al. (2015) (Page 66)
- Figure 8 – Knowledge production regimes with different degrees of openness, Franzoni and Sauerma (2014) (Page 68)
- Figure 9 – Different types of “open innovation”: open source, outsourcing and crowdsourcing, Marjanovic et al. (2012) (Page 69)
- Figure 10 – Mapping out the components in crowdsourcing, Palacios et al. (2016) (Page 79)
- Figure 11– Proposal of detailed model (Page 95)

List of Tables

Table 1 - Link of trends with authors reviewed on crowdsourcing, Palacios et al., 2016 (Page 30)

Table 2 – Emerging research trends in crowdsourcing at micro, meso and macro-levels, Palacios et al. (2016) (Page 41)

Table 3 - Dimensions and references per element at Micro level (Page 81)

Table 4 - Dimensions and references per element at Meso level (Page 83)

Table 5 - Dimensions and references per element at Macro level (Page 84)

Table 6 - Dimensions per element at Micro level (Page 86)

Table 7 - Dimensions per element at Meso level (Page 88)

Table 8 - Dimensions per element at Macro level (Page 89)

Table 9 - List of relationships articles–elements of organizational models (Page 91)

1. Introduction. Objectives of the study. Document Structure

1.1. Introduction

The recent evolution of the information and communication technologies, the web 2.0 framework and the use of Internet as communication tool among users has provided several impacts in society, which led to the rise of new means of work, relationships and cooperation.

The new ability to interact among participants and the possibility to reach much further and to a broader population has provided the emergence of a new type of economic relations among participants called collaborative economy or sharing economy (Lessig, 2008). To understand this new approach it can be used the definition of collaborative economy as “an economic model where ownership and access are shared between corporations, startups, and people. This results in market efficiencies that bear new products, services, and business growth” (Owyang et al., 2013).

Among the different features, activities and processes included in this new economy it can be found the term **crowdsourcing**, which defines the participation of the “crowd” as a resource involved in one or more parts of a company business processes. This is an activity that encompasses remote ownership and access to stages of the process shared between companies and people outside them.

The outsourcing of activities to a large number of remote participants has been used for many years, but with the emergence of internet and the web 2.0 it

reaches another level. Is at that point when the term crowdsourcing is originated by Howe (2006), who describe it as “simply defined, crowdsourcing represents the act of a company or institution taking a function once performed by employees and outsourcing it to an undefined (and generally large) network of people in the form of an open call. This can take the form of peer-production (when the job is performed collaboratively), but is also undertaken by sole individuals. The crucial prerequisite is the use of the open call format and the large network of potential laborers” (Howe, 2006). As said, although the concept previously existed, Howe aligned it with the use of the new framework provided by internet and the web 2.0.

A significant part of the literature and terminology belonging to this area has developed in the last years and has provided a wide and deep view into the subject (Brabham, 2010; Jeppensen & Lakhani, 2010; Afuah & Tucci, 2012; Lehner, 2012; Boudreau & Lakhani, 2013). Nowadays the state of the operating models for this field is a growing area and it has high interest in the academic world. There are several models proposed which describe the relationships among crowdsourcing processes, players and stakeholders, and analyze them through different sets of variables or dimensions. Some of these authors identified organizational theories trying to serve as the frame for crowdsourcing, such as behavioral and evolutionary theory (Afuah and Tucci, 2012) or knowledge-based theory (Jeppesen and Lakhani, 2010).

Still, among this literature an analysis of the impact of these new models on the organizations could not be found. That is, in the review of these sources it has been identified the existence of missing aspects regarding the relationship between crowdsourcing activities and organizations and its functioning. What it is missing is

an analysis of the institutional change they bring and the impact they have at the different levels of the organizations: elements at the macro-level (the society level), the meso-level (the organizational level) and the micro-level (the processes/individual level).

1.2. Objectives of the study

The thesis will cover the relationship between crowdsourcing activities, as a feature of collaborative economy, and organizations, by analyzing the impact of the first ones over the latter ones. The **objective of this research work is the development of a model for the review of the impact that the crowdsourcing initiatives have on the organizations and at what level it is produced**. This new model then could serve as a framework for review of crowdsourcing activities, through the analysis of the existing crowdsourcing definitions, models and taxonomies identified for these initiatives.

The link between the organizations and the crowdsourcing models will be established through the following components:

- **Dimensions of crowdsourcing models:** Each one of the characteristics of crowdsourcing initiatives that models in the literature identify for their assessment or characterization.
- **Elements of organizational levels:** Each one of the elements of organizational levels where an organization can be impacted by crowdsourcing projects and activities. The model proposed in this thesis will identify them.

In order to reach this main objective, four secondary objectives can be defined, such that when they are met the main one is achieved:

- Identify the elements of each level where an organization can be impacted by crowdsourcing
- Identify dimensions of the models that characterize the crowdsourcing initiatives
- Explain the relationship between elements of organizational levels and dimensions of crowdsourcing models, through the proposal of a model for this relationship
- Validate the model with regards to the crowdsourcing models of the literature, a survey and real case studies

This thesis advances in the understanding of the crowdsourcing processes by reviewing the dimensions that characterize a large number of crowdsourcing models, and identifying at which levels they influence these new organizations.

The results present a link between both areas: crowdsourcing models and organizational levels, which can be further developed through the dimensions of the different crowdsourcing models and the elements of the organizational levels. These different dimensions grouped by functions will imply a different impact on the organizations, and that will be the objective as well as the contribution of this study.

The significance of this work and its contribution to the body of knowledge is to provide a distinctive view to the crowdsourcing field when it faces organizations and organizational levels. For companies and practitioners the

contribution of this new insight is to provide a different approach for the analysis of the crowdsourcing initiatives and on their impact in the organizations.

1.3. Structure of the document

The structure of this document presents the process followed in the research process, including the development of the model and its validation.

After this introduction, chapter 2 presents an overview of crowdsourcing, its definition and the main uses of it and areas covered. It should also serve to identify the need for the model that would provide the answer to my research question.

Once the objective of developing a model is identified, then a look will be taken on chapter 3 at the methodological process to following the different parts of the research. It will include the references to the methodology for the analysis of the literature that will review the crowdsourcing and organizational models, for the proposal of a model, as well as the methodological approach for the tools used in the validation of the model, which will include a case study and a survey.

The analysis of the crowdsourcing and organizational models and the development of the relationship model will be carried out in chapters 4 and 5. The first of these chapters will cover the initial literature in the two areas: organizational models and crowdsourcing models, with the idea to develop an initial model that will serve as a framework for establishing the link between the two areas. The second of these chapters will include the review of the different models identified for the analysis of crowdsourcing activities in order to provide a detailed model. It will also include the results of that analysis, in the form of the links between the

dimensions of the crowdsourcing models and the elements of the three levels identified for organizations.

With the model defined and its link with the existing theories analyzed in the previous section, chapters 6 and 7 will then present and discuss the results of its validation carried out in two ways: a qualitative review based on a case study, and a quantitative review based on a survey sent to experts on crowdsourcing (scholars and practitioners). Each of these chapters will include the process followed in the corresponding validation mode, the results obtained and the conclusions that can be derived from them, with regards to the full research. The detail of the survey, with questions and answers, and the elements used for the case study, as the interview carried out at BBVA, will be included in the corresponding annexes.

Then in chapter 8, the conclusions to this research work will be provided, as well as areas for future research and complementary works.

A final chapter will be incorporated with the references used in all the work detailed in the preceding chapters.

Finally, the annexes to the thesis will include different documents or contents that complement the process or provide details to one or more stages.

- Articles published in peer-reviewed journals, with partial results of the research (annexes I and II)
- Interview of the BBVA Innovation Manager used in the case study (annex III)
- Detail of the survey carried out and complete answers (annex IV)

2. Crowdsourcing and organizational forms

The objective of this chapter is to present an overview of the existing literature on crowdsourcing. It includes some current definitions, its main uses, as well as an overview of the existing models, with the objective to identify the existing knowledge gap. This will lead to the research questions and objectives of the PhD thesis.

2.1. Definitions and uses of crowdsourcing

Among the different features, activities and processes included in this new collaborating economy the concept of crowdsourcing can be found, which identifies the participation of the “crowd” as a resource involved in one or more parts of the company business processes. This is an activity that leads to remote ownership and access to stages of the process shared between companies and people outside them.

The outsourcing of activities to a large number of remote participants has been used for many years (Surowiecki, 2004) but with the emergence of internet and the web 2.0 it reached a new level. It was at that point when Howe (2006) coins the term crowdsourcing with the definition seen before. So, although the concept previously existed, Howe aligned it with the use of the new framework provided by internet and the web 2.0. Another author that had brought the awareness about this new economy was James Surowiecki (2004), who analyzed the concept of collective intelligence and the effectiveness of judgments made by large groups of people compared to a few experts, with regards to decision-making.

Brabham (2013) provides another definition, including not only the process of outsourcing but also the means for it, when he described it as “crowdsourcing is an online, distributed problem solving and production model where organizations tap the collective intelligence of online communities”.

A review can be made of the work of Estellés-Arolas and González-Ladrón-de-Guevara (2012), which collect definitions from 32 articles from journals and other communications to state that “crowdsourcing is a type of participative online activity in which an individual, an institution, a non-profit organization, or a company proposes to a group of individuals of varying knowledge, heterogeneity, and number, via a flexible open call, the voluntary undertaking of a task”.

These articles, as well as the ones included in their studies, are a few examples, which showed that since the early 2000's crowdsourcing has been an effective tool in multiple occasions to provide solutions in the functioning of organizations and business projects, whether in the creation phase, or generating ideas, or in production, or in the funding of activities or businesses. However, even if it was an extended practice, for most organizations crowdsourcing was still a particularly unknown field. To provide some theoretical basis on these activities, it was required the work of different authors to establish the grounds for a more complete explanation of the processes and their characteristics.

In the last years, as crowdsourcing emerged as a new paradigm for problem solving in business, a significant amount of literature was produced in the management field. Many authors have gone deeper into these processes with the

objective of validating crowdsourcing as a new and distinctive source of innovation for organizations and its processes.

At a first stage what many authors did was to analyze successful examples of this new approach taken from real world. The objective was to identify different characteristics of the process, which could help them to classify or categorize this type of initiatives. This broad set of articles provided a theoretical ground for crowdsourcing. The authors in this earlier stage of crowdsourcing literature, based on successful crowdsourcing business cases, developed then a few initial models valid for analysis of those projects. They combined practice and theory, and included a significant number of cases of organizations increasingly using the crowd to generate ideas, provide new solutions, carry out some part of their activities, financing new projects, etc. (Brabham, 2010; Jeppensen & Lakhani, 2010; Afuah & Tucci, 2012; Lehner, 2012; Boudreau & Lakhani, 2013). A lot of these new initiatives in the area included in these models had surged in the business world (Threadless, Mosaic Inc., Wikipedia, Threadline, and Innocentive) as well as in established companies that had used this new type of external sourcing (Nestle, LEGO, P&G).

In summary, this early literature that could be found had an empirical origin, which led into proposing some initial theoretical models.

A second stage of literature in this field brought a wave of additional authors, which carried out a more global analysis of existing knowledge about crowdsourcing. In their work, they proposed taxonomies from the review of the earlier models identified. Such literature has helped constructing a theoretical foundation for the crowdsourcing concept.

This later stage of literature comes after a few years of the previous one, when authors try to develop bigger frameworks for crowdsourcing processes based on broad studies of the earlier literature. The articles of Geiger et al. (2011), Estellés-Arolas and González-Ladrón-de-Guevara (2012), Hosseini et al. (2014) and Hossain and Kauranen (2015) can stand out in this stage. These groups of authors proposed then different models and taxonomies for the analysis of crowdsourcing, based on grouping the characteristics identified by the earlier authors. For taxonomy it can be identified the definition used by Geiger et al. (2011) as a “set of dimensions, each consisting of a set of mutually exclusive and collectively exhaustive characteristics that describe how the objects under consideration differ”.

Through the review of the theoretical foundations proposed in these two groups of authors, it can be observed that the different literature provides an insight into these initiatives identifying some dimensions through which they can categorize or classify the crowdsourcing initiatives. These dimensions are related to several components of the crowdsourcing process: the different actors involved in the process, the different stages of the process, and the different uses of the crowdsourcing. And following the several models reviewed, they cover different areas: Participants, platforms used, processes included, tasks involved, engagement of the participants, rewards provided, etc.

Besides this literature that provided a definition of crowdsourcing and an identification of its elements, some other authors bring a different point of view for the analysis of this activity. They approach it with the objective to identify its application for the business world.

One area identified is its use for problem solving, where Afuah and Tucci (2012) indicate that crowdsourcing can be a mean for the transformation of distant search into local search without incurring in further costs. For Jeppesen and Lakhani (2010) crowdsourcing can be also a source for generating ideas.

Another area of objective for these activities is the product development, where there is literature on the use of crowdsourcing for product-design tool (Bayus, 2013; Poetz and Schreier, 2012), or as a method to complement the traditional new product development perspectives of companies by generating and gathering ideas from the users (Poetz and Schreier, 2012).

Some authors identify another area for use of crowdsourcing, which is the impact that customer participation has in the development of products. The crowd can be now integrated in any stage of the process, and be assigned different roles and tasks depending of each specific stage, as the views, needs and ideas that the customers have can now be followed (Mladenow et al., 2014).

These two approaches provide an idea of the crowdsourcing processes and components as well as of the applications that it can have by organizations.

2.2. Knowledge gap and research objectives

In the overview of the state of the art on definitions and uses of crowdsourcing just carried out, many models are identified that allow defining and characterizing the different crowdsourcing initiatives, as well as authors that

indicate the type of activities that can be outsourced to the crowd. All of it is coming from the experience in the real world and later developing into theoretical models.

An area where the existence of a knowledge gap is identified in the crowdsourcing literature is in the link of these models with organizational models and in the impact that these initiatives have on organizations. The relevance of this new approach is important since crowdsourcing has an impact on existing organizations and it can also facilitate the creation of new organizations, with their requirements, but no literature has emerged in this area, which is the reason for the research that will provide this PhD thesis.

Therefore, this will be the area of the research question of this thesis, trying to provide a model for an explanation of this relationship. This global question can also be divided in some intermediate objectives in order to complete the response, which are:

- Identification of relevant crowdsourcing models, including the dimensions they provide for analysis of these initiatives
- Identification of organizational levels involved in the crowdsourcing process
- Development of a model that links the organizational levels and the crowdsourcing models
- Validate the model with regards to existing crowdsourcing models, to real crowdsourcing initiatives and to opinion of experts.

3. Methodology

The evolution of the study carried out in this thesis has followed a methodological approach based on five stages. Each of them has implied following a specific methodology, as it will be presented in the next paragraphs.

In the first stage a deep analysis has been carried out of the literature on the topics covered in the thesis, in order to establish the theoretical framework of the two fields of analysis reviewed in the research: the different crowdsourcing models and their dimensions, and the organizational levels and their corresponding elements at which to analyze the impact. That point will be the basis to develop the model that this study proposes.

The second part of the research covers the development of the initial model, which serves as a framework for explaining the link between organizations and crowdsourcing. This model should identify the levels at which the crowdsourcing initiatives should impact organizations, and its development is carried out based on the analysis of the previous literature. The methodology applied here will be the analysis and synthesis of the prior literature identified in the review.

The third part of this investigation will deepen into the review of the literature of crowdsourcing and develop the detailed model of the relationship between crowdsourcing activities and organizations. Therefore a more thorough literature review is carried out, identifying the existing crowdsourcing models in the literature and the dimensions that each model proposed for the analysis and classification of crowdsourcing activities. The subsequent analysis of these models,

identifying the dimensions that each one proposes, as well as the organizational levels, will produce the detailed model that is the objective of the Thesis. This more detailed version of the model will identify the links between the dimensions of crowdsourcing models and the elements of the organizational levels. In this part a review of the literature will be carried out on crowdsourcing for the different models, which will continue with the analysis and synthesis of the models identified.

Then the methodologies employed in the fourth and fifth stages, they have been used to validate the model proposed using both a case study analysis and a survey. The validation is carried out first on a qualitative basis, through an in depth analysis of one case study. Then a second part of the validation process is done by using a quantitative approach to validate the use of the model through a survey among practitioners and scholars.

Figure 1 – Phases of the Research and Methodologies used

Next it will be covered in detail the methodologies employed in the different parts of the investigation. In summary, the work will be on the literature review and the analysis of the selected articles, which will cover the first block with chapters 4 and 5. Then the work will be done with other methodologies on the second block of the document, as survey and case studies, which are going to be used in Chapters 6 and 7.

3.1. Model proposal

The two chapters included in the first part of this research aim at carrying out a wide and exhausting review and analysis of the existing theories and models for the crowdsourcing processes and activities and for the new organizational forms, with the objective of proposing the model that will result from the thesis.

This work of review, selection and analysis of the literature is divided in two phases, each one with several parts, to cover the different aspects of the proposal.

The first phase of this review will identify and analyze the existing theories and models relevant for the research question on crowdsourcing and new organizational forms, and it will provide an initial model which be the framework of the later work and the concepts that will be studied in detail in the second phase.

This phase identifies three parts:

- A review and analysis of the crowdsourcing literature to identify and select the existing models for this activity and the dimensions that

characterize them according to the models. The result of this part will be a selected set of crowdsourcing models with their dimensions.

- A review and analysis of the work on the new organizational forms that are surging from these activities, to identify the existing organizational levels at which there is an impact in the organizations. The result of this part will be a structure of organizational levels with different elements for each of them.
- Develop an initial framework model linking the crowdsourcing models and the organizational levels. The result of this part will be this initial version that will be the basis for the next phase of the research, which will work on the details of this model.

For this first part it is need to bring again the definitions that we have provided on the components of the crowdsourcing models and organizational levels that will be used for the analysis and the construction of the models:

- **Dimensions of crowdsourcing models:** Each one of the characteristics of crowdsourcing initiatives that models in the literature identify for their assessment or characterization.
- **Elements of organizational levels:** Each one of the elements of organizational levels where an organization can be impacted by crowdsourcing projects and activities. The model proposed in this thesis will identify them.

The second phase of this review is meant to analyze in detail the dimensions identified in the crowdsourcing models selected. It is also dedicated to analyze the

organizational levels at which these activities have an impact and the elements of those levels, within the initial framework model. From the combined crossed-analysis of both crowdsourcing dimensions and organizational levels the detail model will be developed. This phase identifies two parts:

- A review and analysis of the dimensions identified in the crowdsourcing models and of the elements identified in the organizational levels. A link will be established between each of them, establishing a link between both areas. The result of this part will be the set of links between dimensions and the organizational level elements.
- Develop a detailed model linking crowdsourcing models and organizational levels, but now at the level of the dimensions and elements of impact in organizations. The result of this part will be the final detailed model.

3.1.1. Establishing the grounds for proposing a model

By the definition of Fink (2005), a literature review is a “systematic, explicit and reproducible method for identifying, evaluating and synthesizing the existing body of completed and recorded work produced by researchers, scholars and practitioners”. Therefore the work to be carried out will include those three characteristics, as a way to ensure the clarity and validity of the research carried out, with the information on the databases accessed, the keywords used, etc. Another aspect to consider is that the review that will be performed has to be led by

the research question (Booth et al., 2016; Counsell, 1997), which determines how data is identified, collected and presented. This approach is shown in the different steps that the research is carried out, as explained in the previous chapter and shown in Figure 1.

A further approach in this area is provided by Baker et al. (2010), which look more deeply in the process as they indicate that the review projects have four phases: Concept, Planning and definition, Implementation and Finalization. This approach will also be applied in the different parts of the research where a literature review is carried out.

Finally, an additional aspect would have to be considered as it is the quality assessment, which Booth et al. (2016) split into two main concepts: internal validity, which focuses on “whether we can believe a study” (Booth et al., 2016, p. 142) and external validity, which is derived from the generalisability and applicability of the results (Booth et al., 2016).

Within this thesis, the first step will then be to set the scope of the work of review, establishing the who, what and how of the investigation (Ibrahim, 2008).

Given the research question and objectives, the search for relevant literature will be focused on identifying articles and other references that provide models for analysis of crowdsourcing activities, and also articles that deal with the new organization models that might be coming out as a consequence of these new initiatives.

The literature on the crowdsourcing field is mostly of recent years, initially based on review of successful cases to propose models of analysis and later on

further review of those models to propose more complete models through taxonomies. Therefore a scope of the research will have to set that covers a sufficient period of time after the year 2006, when Howe coined the term of crowdsourcing, in order to ensure the validity of the investigation.

With this same goal of validity, the search will be carried out in specialized databases, which ensure that the adequate field of analysis is addressed. A platform such as the ISI Web of Science (WOS), with a multidisciplinary approach and giving access to all main scientific journals, should guarantee that the management field is covered as well as other possibly related fields, both with the theoretical models of crowdsourcing and with practical examples of that approach.

Then on the specific details of the conduct of the research, the focus on the research question will lead to work on keywords such as *crowdsourcing*, *models* and *taxonomies*, both individually and later with Boolean logic in order to combine them.

Additionally, the initial review of literature on crowdsourcing models already indicated the existence of a first group of authors presenting models that explained success stories in the field, and a second group of authors that provided taxonomies and analysis of several earlier models. The existence already of these reviews of this area of research will help ensuring the reliability of the research to cover the crowdsourcing field and that sufficient relevant models are identified.

After the initial identification of potential references is completed, a review of all of them will then be carried out to identify those articles, books or other references, which include a potential model for categorization, explanation or classification of crowdsourcing activities. To be selected, these models should

provide some dimension or dimensions that allow the classification of a crowdsourcing initiative.

A similar process will be applied for the review of literature on organizational models linked to the new organizational forms associated to crowdsourcing activities. From the documents initially identified the next task will be to look for those that include a structure of organizational levels, which would then be basis for proposing the model.

3.1.2. Proposing the model

After the collection and selection of relevant references, the work will be on the development of a model. The use of a qualitative method for the analysis gives the possibility to collect information that is more detailed and specific and that can go further than the statistical approach of a quantitative approach (Miles and Hubermann, 1994). Additionally this approach also allows juxtaposing findings from different sources, in order to achieve results that are not identified by the authors of the individual papers (Booth et al., 2016).

In qualitative approaches the synthesis relies heavily on pattern recognition and is broadly characterized as aggregative, configurative and integrative (Booth et al., 2016). Therefore the work on the review of models and the development of a framework model first, and a detailed model afterwards, will rely on this methodology.

Proposal of a framework model

Based on the earlier review of the literature and the identification of the organizational levels and sublevels, specially linked to new organizational forms, the objective of this work is the proposal of an approach for analysis of the crowdsourcing activities, through the development of a model that covers the components of the crowdsourcing processes in order to cover the existence of a link between the models and the organizational levels. Both the framework model and the detailed model should help on the alignment of the crowdsourcing initiatives with the strategy of the company.

Proposal of a detailed model

The prior step of the literature review will have as result a set of different models, every one of which will include some dimensions for analysis of crowdsourcing activities. Then in this part the analysis of the different models and dimensions will allow the classification of the latter ones in different groups corresponding to the levels identified in the literature for the organizational models. The objective will be to identify at which level of the organization does each dimension deal with.

The in depth analysis of the crowdsourcing models found in the literature that is carried out in the prior point is continued now in order to establish a link with the organizational levels.

In this analysis each level is divided in several sub-levels and the dimensions identified will be further classified into these sublevels. The objective for this classification will be to allocate all the dimensions into the elements to link the crowdsourcing models to organizations. The allocation of the dimensions into the

levels and elements should help in the implementation of crowdsourcing activities as it will provide a structure for them with components needed.

3.2. Model validation

The idea behind the methods used for validation of the model is two-fold, and therefore it will imply different methodologies.

On one side the validation process will be in a qualitative way through selected case studies of companies, which will review in detail those cases and other information and, eventually carrying out interview(s) to complete the information required on crowdsourcing activities. The objective in this case will be to validate the model through its application into one or more real cases.

Then on the other side this approach will be validated among its potential users, which will be carried out through quantitative approach through a survey, aimed at obtaining an external validation of the approach proposed and its fit within the academic and practitioner groups.

In summary, the model of relationship proposed will be subjected to criticism through a survey among scholars and practitioners linked with the crowdsourcing and open innovation fields, through the in depth analysis of a case study. With this structure, the aim is to get the external validation on the applicability to real cases and generalizability of the approach.

3.2.1. Qualitative validation

According to Yin (1984), the type of research method to use is based in three conditions, which are first the form of the research question, then the level of control required over behavioral events and lastly the degree of focus on contemporary events versus historical events. And a case study is the adequate one when the question is of the type of how or why, as they are explanatory questions that favor such research method. It is also the case when it does not require control and when it focuses on contemporary events.

Additionally it can be observed that case study is routinely applied for diverse purposes including testing theory (Eisenhardt, 1989), and it is used as an explanatory technique that verifies, explains or compares a new phenomenon, as would be this case.

And finally, it can also be found that “a case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context” and “multiple sources of evidence are used” (Yin, 1984, p. 23). This is also indicated as a factor for validity of the process, through the use of multiple sources of evidence (Kidder, 1981).

Case study in the thesis

In the research it will be used the case of the crowdsourcing activities of one innovative company in the banking industry, BBVA. The review of these activities will be based on several sources, as it will include a case study on BBVA and other articles that will provide the basis on the case. And finally an interview with a

manager of the area of Innovation to analyze deeply these activities, their evolution, the change in their objectives and other characteristics of their crowdsourcing projects.

The aim of using a real case study on crowdsourcing and its application is to have the opportunity to analyze the evolution of this process and the results with regards to the dimensions and elements.

3.2.2. Quantitative validation

The objective of the survey will be to test the validity of the approach that the model introduces. The idea is to verify the applicability of the approach proposed by the model by respondents linked with the area of the research. It also looks for validation of the detailed model as the respondents will face questions on the link between dimensions and organizational level elements that the model includes.

Description of the survey

A survey will be conducted among academics and practitioners both related with crowdsourcing to validate the approach proposed. On one side the survey will be distributed to academics involved in research projects or with publications in the area of crowdsourcing. On the other side it will be distributed among participants in open innovation courses within an executive MBA program. The survey will be created with the Survey Monkey platform and distributed through e-mails to

academics, and the participants in the open innovation courses, as well as posted in the linked platform.

The survey will be divided in four steps, and it will start with general questions for the participants and then it will continue with a broad validation of the approach to continue into a more detailed one for the levels and sublevels.

The first part will try to identify the area belongs the respondent: academic, practitioner or both, and the closeness of the respondent with crowdsourcing activities or their knowledge about this area.

The second part of the survey will try to determine the validity of the approach proposed to analyze the impact at the three levels: micro, meso and macro. It is meant to be done firstly by asking for confirmation of the existence of an impact, and afterwards about the validity of the three proposed levels.

The third stage is designed to review the proposed sublevels, and their validity for a further analysis of crowdsourcing activities.

As the model will try to associate the sublevels mentioned earlier with the elements defined in each model to classify/characterize crowdsourcing initiatives (process, type of task, reward, etc.), the final step of the survey will inquire the participants for the usefulness of associating them in order to measure the impact.

The complete survey, with the questions and answers is included in annex IV of this document.

4. Results: Framework model

The first stage of the research looks at the literature on crowdsourcing and on the organizational models that arise on that type of activities. After reviewing the different models and types of activities the objective is to link both areas and identify how they relate. From that relationship an initial model is proposed that should serve as the framework for the final model.

In summary the results from this first stage are:

- First result: Identification and classification of existing crowdsourcing activities
- Second result: Identification of organizational levels where there can be an impact of crowdsourcing activities
- Third result: Development of the framework model

These results of the thesis have been already the subject of partial publications in articles in peer-reviewed journals (see annexes I and II).

4.1. Identification and review of existing crowdsourcing activities

The ascent in the use of new technologies and the evolution of these to a web 2.0 approach has facilitated organizations increasingly employing the crowd for different types of activities that otherwise they would need to carry out themselves. Some of these activities are the generation of ideas or finding novel solutions or

financing new projects, as examples of crowdsourcing. One of the consequences of these activities is that the academic discourse on the field of crowdsourcing has been on the rise in the last years (Jeppensen and Lakhani, 2010; Afuah and Tucci, 2012; Lehner, 2012; Boudreau and Lakhani, 2013). The surging evidences of different organizations employing it further enhanced the theoretical approach. Such was the case of established and new organizations or initiatives like Nestle, P&G, Wikipedia, Mosaic Inc, Threadline and Innocentive.

Nevertheless, even if its use in the business world had increased, the situation was that crowdsourcing for most organizations was still an unknown area for them to operate. Crowdsourcing represents a new approach for business processes that necessitates new thinking, new resources and new capabilities from the side of the organizations in order for them to deal in an effective manner with the creative but unsettled processes required to engage the crowd, and also for successfully managing both at the same time the high-effect results as well as the risks linked to them.

It is within this framework that it was needed to look at the academic literature to determine the types of activities where crowdsourcing can be found. The process that was followed to identify, select, review and analyze the relevant journal articles, books, reports, review papers, case studies and other publications was divided in three stages.

In the first stage a set of searches were conducted in the databases included in the ISI Web of Science (WOS) platform to identify initially publications that could potentially be related to crowdsourcing and later be filtered to concentrate on those

linked with organizations. The starting search was carried out in May 2015 on documents of the last five years and it was a keyword search of references that included *crowdsourcing* in any of the fields of title, abstract or keywords. In this first phase, the results included 428 publications from all disciplines. The search was then restricted to publications in the business and economics research area of the social science database of the ISI Web of Science (WOS), which reduced the initial sample and produced 52 positive results. Additionally, a connecting search was completed to select publications specific to the topic in the article, using the following keywords: “*crowdsourcing AND organizations*” which resulted in 39 publications; and “*crowdsourcing AND organizational forms*” that provided 4 more publications. This last procedure was aimed at finding publications more explicitly linked to the subject of crowdsourcing and organizations by taking out the filters regarding the area of discipline.

In this second stage, the results of both searches were first combined, excluding common ones, and then reviewed in detail to identify those applicable to the topic of crowdsourcing activities in relation with its area of application. As a result of this process 43 publications were finally obtained.

The third stage reviewed the last results, by contrasting and comparing them, and then synthesized the search to finally identify five emerging research themes as areas of activity of crowdsourcing. These five research lines illustrated themes recurrently appeared in the search and in line with the current wide research occurring in the crowdsourcing field. The five areas of activity identified were:

- Crowdsourcing as a tool for problem solving

- Crowdsourcing as a new paradigm for organizational learning
- Crowdsourcing as a form of open innovation
- Use of crowdsourcing for new product development
- Use of crowdsourcing in collaborative initiatives

The following table from Palacios et al. (2016) summarizes the results of this part of the research with the relevant literature results:

	Problem Solving	Learning Paradigms	Open Collaboration / Open Innovation	New Product Development	Organizational innovation	Collaborative initiatives and Coordination Tool
Reference						
Afuah, A., & Tucci, C. L. (2012)	X					
Piezunka, H.; & Dahlander, L. (2015)	X					
Schlagwein, D., & Bjorn-Andersen, N. (2014)		X				
Zhao, Y. C.; & Zhu, Q. (2014)	X			X		
Albors, J., Ramos, J. C., & Hervasa, J. L. (2008)		X				
Bayus, B. L. (2013)	X		X	X	X	
Bonabeau, E. (2009)	X					
Boudreau, K., & Lakhani, K. (2013)	X		X		X	
Brabham, D. C. (2010)	X					X
Estellés-Arolas, E., & González-Ladrón-de-Guevara, F. (2012)	X		X		X	
Jeppesen, L. B., & Lakhani, K. R. (2010)	X	X				
Kleeman, F., Voss, G.G., & Rieder, K. (2008)				X	X	
Kuppuswamy, V., & Bayus, B. L. (2013)						X
Lakhani, K.R., Lifshitz-Assaf, H., & Tushman, M. L., (2012)	X		X			
Levine, S., & Prietula, M. (2014)			X		X	
Majchrzak, A., & Malhotra, A. (2013)			X			
Marjanovic, S., Fry, C., & Chataway, J. (2012)			X			
Mollick, E. (2014)			X			
Poetz, M. K., & Schreier, M. (2012)				X		
Schlagwein, D., & Bjorn-Andersen, N. (2013)		X				X

Turner, A. M., Kirchhoff, K., & Capurro, D. (2012)	X			X		
Zheng, H., Li, D., & Hou, W. (2011)	X			X		

Table 1 - Link of trends with authors reviewed on crowdsourcing, Palacios et al., 2016

The table identifies in some references one additional feature of crowdsourcing “organizational innovation”. This activity is discarded as one of the activities that organizations use for employing crowdsourcing as it is considered more a consequence of the use for other activity or activities. All references that included it included also one or more of the other activities.

The detailed results for each area of activity, with the relevant literature on the different topics were the following ones:

4.1.1. Crowdsourcing as a tool for solving problems

Several authors present crowdsourcing as a tool for companies to deal with solving needs and identifying solutions: research and development, market research, generation of ideas, etc. As these articles are dealing with an emerging field, it is interesting to note that when they analyze the approach that crowdsourcing provides for addressing business needs they also review their fit with different organizational theories.

One of the main articles related with this area of activity is the one by Afuah and Tucci (2012), in which they highlight the use of crowdsourcing for problem solving and exploration activities. Its use for finding solutions is identified when they indicate that sometimes crowdsourcing enables organizations to transform distant

search into local search without the need to take on additional expenses: “Therefore, crowdsourcing may be a better mechanism than either internal sourcing or designated contracting for solving problems for which solutions require distant search.” (Afuah and Tucci, 2012, p. 356).

These authors also analyze the organizational theories that can provide a frame for crowdsourcing, and they identify both the evolutionary and the behavioral theories of organizations in opposition to transaction cost economics. In their analysis they indicate that “the focal agent’s decision of whether to solve the problem internally or outsource it will depend primarily on transaction costs and not on problem-solving capabilities.” (Afuah and Tucci, 2012, p. 356). They provide another theoretical framework as they establish a relationship between crowdsourcing and organizational ambidexterity when they equate the exploration and exploitation activities in organizations, as “crowdsourcing may be used to more efficiently and effectively perform some explorative activities, enabling ambidextrous organizations to be more exploitative” (Afuah and Tucci, 2012, p. 371).

Within this field of problem solving, crowdsourcing can also be a source for idea generation “by showing the effectiveness of a market-mechanism to draw out knowledge from diverse external sources to solve internal problems.” (Jeppesen and Lakhani, 2010, p. 1018). They identify that the crowdsourcing approach lies within the environment of the knowledge-based theory of the firm.

Finally, according to Daly and Natarajan (2015) it can be also considered as a source for generalizable longitudinal data that is both reliable and inexpensive.

The previous authors have brought light on the advantages brought by collective intelligence as they propose a framework for activities linked with the crowd. Crowdsourcing deals with several areas and purposes of different nature: R&D, market research, knowledge management and customer service. Nevertheless, there are other authors that point at the different issues that are brought by this collective intelligence approach, as it is the case of loss of control, intellectual property, engagement, etc., that have to be taken into account by managers (Bonabeu, 2009).

Finally within this field, although a large part of research has focused on the final objective of crowdsourcing activities, some other authors (Zheng et al., 2011) look at the modes in which optimal solutions can be obtained from crowdsourcing contest participants. The main conclusion is that organizations need to improve their design of tasks and to motivate the contest solvers into participating in the co-creation process for these optimal solutions. Zheng et al. (2011) identify a link between crowdsourcing and organizational theories that is related with using applied theories as it is the case of the theory of extrinsic and intrinsic motivation or the theory of job design.

4.1.2 Crowdsourcing as a new paradigm for organizational learning

Another group of authors showed the contribution of crowdsourcing to the learning process in organizations. They identified its use as a mechanism for innovating or for learning from outside the organizations.

In their work, Schlagwein and Bjorn-Andersen (2013) examine crowdsourcing through the identification of cases and references over several industries where crowdsourcing is used as a mechanism for organizations to learn and innovate. In their study they determine that this was the case in large organizations and often in incumbent ones on the industries they analyzed. As a result they conclude that crowdsourcing may provide a general, new approach for organizations to learn and more specifically for incumbent firms in mature industries.

Also in this area, Albors et al. (2008) analyze in their work how the evolution of technology and online platforms bring a new learning element as well as a new network of collaborating paradigms.

Jeppesen and Lakhani (2010), which were included in the part dedicated to problem solving, showed the effectiveness of a market-mechanism, as it is the case of crowdsourcing, which is employed to solve internal problems by collecting knowledge from diverse external resources. Firms can use crowdsourcing as a source for idea generation in their learning processes.

4.1.3. Crowdsourcing as a form of open innovation

Another potential use of crowdsourcing is related with innovation, mainly through the concept of open innovation, which was introduced by Chesborough in 2003 when he identified the need that organizations had in their innovation process to have access both to external ideas as well as to internal ones.

In this field of use of crowdsourcing, the references included are those that link crowdsourcing with open collaboration when it is used for innovation, therefore representing a case of open innovation.

Levine and Prietula (2014) identify the application of open collaboration for both on-line and off-line ventures as a use for innovation. The use of open collaboration is differentiated in their work from other organizational structures such as the case of cooperatives and firms. The results of their research conclude that open collaboration as a model has a good performance even in environments seemingly hard. Therefore it makes it a likeable process to be expanded into new domains.

Murray and O'Mahony (2007) provide a framework which points as collaboration involving the reuse, recombination and accumulation of knowledge, not only sharing it. And their framework provides a context of disclosure, access to knowledge and rewards for this collaboration, as a characteristic of crowdsourcing activities.

Some other authors establish a more direct relationship between crowdsourcing and open innovation. Marjanovic et al. (2012) identify crowdsourcing as one of the possible applications of open innovation. And in their work, Albors et al. (2008) determine that crowdsourcing and open innovation

represent examples of the same learning paradigm. For them in both cases the knowledge is distributed, as well as the process of opening the R&D activities of a firm, as the source of competitive advantage that open innovation identifies.

4.1.4. Use of crowdsourcing for new product development

One of the other fields of activity for crowdsourcing initiatives is the development of new products. There are several authors that identify crowdsourcing as one method for firms to generate and collect ideas from the side of the users within the process of product development.

Poetz and Schreier (2012) indicate that with this approach they complement the traditional perspective of the firm for the product development.

Estellés-Arolas and González-Ladrán-de-Guevara (2012) relate the development of new products with co-creation or user innovation for those practices that involve internet-based collaborations.

And within this area, Boudreau and Lakhani (2013) identify the crowdsourcing activities and the crowd as an innovation partner for the companies.

When reviewing the specific roles of the crowd in the product development, the use of crowdsourcing can facilitate customers' participation in the process when following the views they express, the needs they have and the ideas that they provide. According to Mladenow et al. (2014), the crowd can be integrated by firms in any stage of their processes. The crowdsourcing approach facilitates that

participants can have different roles and tasks as they can participate in different stages.

Opposite to this is the work of Schenk and Guittard (2011), who propose that the concepts of new product development and crowdsourcing correspond to phenomena that are very different. The first one indicates that the crowd can provide resources to organizations under specific conditions, but the use of crowdsourcing does not necessarily imply that there can be a customer feedback during the innovation process.

4.1.5. Use of crowdsourcing in collaborative initiatives

Finally, it will be reviewed the close relationship of crowdsourcing and other crowd-related activities, such as crowdfunding, with start-ups and entrepreneurial initiatives. The relationship between those areas may have different type of roles.

In the works of Brabham (2010) and Kuppuswamy and Bayus (2013) crowdsourcing participates as a tool in the companies' processes, since many startups incorporate it in the form of a mechanism of coordination and collaboration present at the center of their business. The implementation is based on the use of information technologies.

Another form in which crowdsourcing can be identified is in the development of new business models that based on the crowdsourcing approach itself (Schlagwein and Bjorn-Andersen, 2013).

Finally, one other common version of this link of crowdsourcing with entrepreneurial and business activities takes the form of crowdfunding, with the companies reaching the crowd as a source of funds to finance their entrepreneurial initiatives (Belleflamme et al., 2014; Bruton et al., 2015). Even if crowdfunding involves the participation of the crowd that field will not be addressed, as it is a complete area by itself, with its own characteristics. Among the difference in both approaches, entrepreneurs employ crowdsourcing as a potential source of ideas or solutions, or information or feedback from the crowd. On the other side, entrepreneurs use crowdfunding as a way to raise capital for their initiatives, which can have different forms, as equity, loans, donations, or for example pre-ordering of products (Belleflamme et al., 2014). And as Xu et al. (2015) identify, crowdsourcing can be found in the implementation of crowdfunding projects from the sponsor satisfaction perspective.

4.2. Organizational levels

Once identified the activities at which crowdsourcing are being aimed at by organizations, the next step in the process is to understand the impact that this new approach is having for them. Within that path it is needed to identify how are the organizations or organizational approaches that are surging from this new paradigm in the business process.

In the review of the literature on this area, the theory that can be found is not completely specific of this field. There is some conceptual work on creation of new

organizational forms but some areas are yet in need of development of the research. However it can be found the work of Suddaby et al. (2007) regarding the processes that occur within the organization. And a good basis for the analysis is that of Greenwood and Suddaby (2006, p. 30), who provide a definition of organizational form as “an archetypal configuration of structures and practices given coherence by underlying values regarded as appropriate within an institutional context”. The need for structures and values at one level is complemented by the need for some legitimacy as indicated by Rao et al. (2000, p. 242), who define organizational forms as “manifestations of institutional logics that require legitimacy in order to become viable and a social fact”.

These elements identified as needed for the construction of organization needs are aligned with the work of Tracey et al. (2011), who determine that in order to build a model of institutional logics it is essential to conjugate work at three institutional levels, which are the organizational levels where there can be an impact of crowdsourcing activities:

- The micro or individual level
- The meso or organizational level
- The macro or societal level

At the micro level the institutional work is linked to opportunity recognition on the new organizational forms (Tracey et al., 2011), as it could be on the motivation of the crowd or on the outsourcing organization.

At the meso level, which covers the organization, Child and Rodrigues (2003) identify that the research at the institutional logic concerns the design and

mechanics of the organizational forms. For the organizations applying crowdsourcing this includes the form and the design of the organization, establishing the boundaries for it, or its structure.

Finally at the macro level when establishing the link between the organizational form and the society, Rousseau et al. (1998, p. 402) refer to the legitimacy of the organizational forms, as they require “the creation of more complex governance practices involving trust and cooperation”. Moreover in this level of the organization, Dacin et al. (2002) indicate that the appearance of institutional changes alters power alignments at this macro level make create delegitimization of the existing organizational forms. The organizations at this point may face a critical stage of theorization and having to obtain legitimation by existing actors in the field or new ones arising from new ventures. At the macro level a relevant issue is this legitimization process of the new organizational forms emerging in this changing environment. Within that subject, Scott et al. (2000) look both at factors that influence either the deinstitutionalization process or the social legitimation processes. They identify the existence of factors that influence the deinstitutionalization process of existing norms and practices (Scott et al., 2000, p. 24–25), and therefore question their legitimacy which are: the functional pressures, among them the existing intense competition for resources; the political pressures, which include the changes in the distributions of power and interest; and finally the social pressures, as it is the case of the differentiation on the beliefs and practices of the new members and the existing ones. And they also indicate the presence of factors that search for the credibility or for the suitability of the new types of players and interests, as well as of the new repertoires of actions, or of the new kind of

structural arrangements, with the objective of achieving social legitimation. In the social legitimation processes of the new ventures a complex transformation occurs and it may entail changes in different natures as: in the relationships among existing organizations, or in the boundaries of existing organizations, or in the boundaries of the field of action, or in the governance structures or with the emergence of new populations.

4.3. Development of the model

The previous parts have dealt first with the existence of a new paradigm, crowdsourcing, and the types of activities where it can be found in the organizational processes. Then the emerging organizational forms were reviewed and one of the conclusions is that for these new organizations or organizational approaches it will be required a model of institutional logics, that works at three levels. Therefore this organizational levels where there can be an impact of crowdsourcing activities, which will have to be consider in the model proposed, are:

- The micro level: it deals with the processes and the individual dimension
- The meso level: it addresses the issues related with organizations
- The macro level: it covers the issues at the level of the society

These three levels will establish the framework to analyze the impact of crowdsourcing activities on the organizations. In the detailed model, these three levels will be divided into elements that compose them to provide a more complete classification.

Table 2 presents the three organizational levels identified within the context of institutional logic. Additionally it also provides a link with the micro, meso and macro levels for the crowdsourcing activities:

Level of analysis	Institutional context	Crowdsourcing context
Micro	Opportunity recognition (Tracey et al., 2011)	Motivation of the crowd or solutions providers
Meso	Design and mechanics of organizational form (Child and Rodrigues, 2003)	Organizational factors like structure, form and boundary conditions
Macro	Governance practices, code of conduct, ethical issues (Rousseau et al., 1998; and Dacin et al., 2002)	Environmental factors like governance of transactions, legal framework

Table 2 - Emerging research trends in crowdsourcing at micro, meso and macro-levels, Palacios et al, (2016)

So an initial framework model will be now introduced, based on these three levels and the relationships they provide in the crowdsourcing process. In the detailed version, the three levels will be further developed into elements that compose them, but this model already includes some of the potential elements of each level of analysis.

Figure 2 - Framework model *

A more extended framework can be found in the article of Palacios et al. (2016), (see Figure 1 of annex I).

* This figure is included in an article submitted to the International Journal of Entrepreneurial Behavior & Research for review

5. Results: Detailed model

The next stage in the research project of this thesis is the development of a detailed model for the relationship between crowdsourcing and organizational levels that expands the framework model just provided in the previous chapter.

For this detailed model it will be needed to identify the different crowdsourcing models from the literature and the dimensions they include for the analysis. The objective is to provide a link between them and the organizational levels and elements, as the basis of the detailed model.

In summary the results from this second stage are:

- First result: Identification and classification of existing crowdsourcing models and dimensions of analysis
- Second result: Classification of dimensions from the models in organizational levels and elements of these levels, according to the types of dimensions
- Third result: Development of the detailed model that relates crowdsourcing and organizational levels and elements

These results of the thesis have been already the subject of partial publications in articles in peer-reviewed journals (see annex II).

5.1. Crowdsourcing models and taxonomies. Dimensions for analysis

The comprehensive review of crowdsourcing models that will be carried out in this chapter will aim at identifying the dimensions that each model proposes for the analysis of crowdsourcing activities. As in the previous chapter with the case of crowdsourcing activities, the research study was designed in three steps.

First, a literature review was conducted; specifically, combining a systematic search on the ISI Web of Science (WoS) platform for the corresponding references, with a scan of the reference lists from those articles considered as relevant ones as well as the models they mention: The objective was to identify the articles that touch upon models and classifications of the crowdsourcing activities. In order to carry out the e-search, the following combinations keywords were initially employed: *crowdsourcing AND organizational form*, *crowdsourcing AND dimension*, *crowdsourcing AND taxonomy*. Later the search was expanded and included *crowdsourcing organization*, *crowdsourcing business*, *open collaboration*, *innovative organization*, *crowdsourcing model*, and *crowdsourcing cases*. For the time frame of the research, the selected journal articles were those that had been published between 2006 and 2016 in English. Finally, priority was given to journals and other documents that were focused on business and organizations, such as those included in databases and libraries as: Abi Inform, Springer and Harvard Business Review. Additionally, the documents encountered were classified according to the index JCR index and Quartile Score. After all these steps, this activity led to the final identification of 44 articles that were initially relevant to the study.

Then, in the second step of the process, each of these documents was thoroughly reviewed to identify if it included or provided models or taxonomies for crowdsourcing activities, and also to see its relationship with organizational forms. In this way, close to forty studies related to crowdsourcing were analyzed and classified according to the objectives of the project: identify the dimensions of analysis of crowdsourcing activities. Finally the global number was reduced to the 31 documents included in the study.

The third step was to analyze in detail all of these studies, models and taxonomies, reviewing the dimensions they identify and classifying them with regards to the micro, meso and macro levels identified for the assessment of organizational forms, and the elements that constitute each level, as determined in the previous framework model or proposing new elements. And within that process a final list of elements will be provided for the model.

The results will then present a connection between both areas of analysis: crowdsourcing models and organizational models, and it will be elaborated further by the link established between the dimensions and the elements include in the different models, as shown later in this chapter.

5.1.1. Theoretical foundations

The idea now is to present the basis for the review of the crowdsourcing models, based on the point of view the authors use as a reference. At the beginning of the document the definitions of crowdsourcing from Howe (2008), Brabham

(2013) or Estellés-Arolas and González-Ladrón-de-Guevara (2012) were already presented. Besides them another author that had brought the awareness about this new economy was James Surowiecki (2004), which presents the term as a business model coming from a set of processes where an activity is outsourced to a group of people (a crowd) which create a product, service or add value to a process proposed by an external organization, through a collaboration of ideas. And for this it has to be recalled the further detail in the definition introduced by Geiger et al. (2011, p.1) when they indicate “The crowd is an undefined (and generally large) network of people”.

Since the earlier introduction of the term, crowdsourcing has been an effective tool in multiple occasions to provide solutions in the functioning of organizations and business projects; whether in the creation, idea generation, production, funding, etc.

Still, for most organizations, it is found that crowdsourcing is an unknown field that has required the work of different authors to provide the basis for its definition.

The emergence of crowdsourcing as a new paradigm in business problem solving and other activities helped to produce significant literature in the management field in the last years. From the academic perspective many authors have gone deeper into these processes with the objective of validating crowdsourcing as a new and distinctive source of innovation for organizations and their processes.

In these academic literature on crowdsourcing models two periods can be identified, as we have a first wave of authors providing the first set of models based on the real experiences, and then a second wave of authors deriving more advanced models based on the earlier authors.

The path followed by most of the authors from the first wave was through the review of broad set of successful business cases in the use of crowdsourcing, which served as the basis for them to provide different models for analysis of crowdsourcing projects. The literature that could be found mostly combined practice and theory, as through the analysis of case studies it tried to provide some theoretical models. Each of these models identified some characteristics of the projects that could be taken as the dimensions to be used for the differentiation, classification and categorization of these initiatives.

As presented in chapter 2, in the introduction to crowdsourcing activities, a significant number of authors have presented cases of organizations increasingly using the crowd to generate ideas, provide new solutions, carry out some part of their activities, financing new projects, etc. (Brabham, 2010; Afuah and Tucci, 2012; Boudreau and Lakhani, 2013; Jeppensen and Lakhani, 2010; Lehner, 2012).

A second stage brought another wave of authors, which carried out a more global analysis of existing literature about crowdsourcing and which proposed models or taxonomies from the review of the earlier models. Such literature has helped constructing a theoretical foundation for the crowdsourcing concept. This later stage of literature comes after a few years of the previous one, when authors try to develop bigger frameworks for crowdsourcing processes based on broad

studies of the earlier literature. The articles of Geiger et al. (2011), Estellés-Artolas and González-Ladrón-de-Guevara (2012), Hosseini et al. (2014), Hossain and Kauranen (2015) stand out among these. This group of authors proposed then different models and taxonomies for the analysis of crowdsourcing, based on the grouping the characteristics identified by the authors. As indicated earlier the concept of taxonomy will be used according to the definition employed by Geiger et al. (2011) as a “set of dimensions, each consisting of a set of mutually exclusive and collectively exhaustive characteristics that describe how the objects under consideration differ”.

Through the review of the theoretical foundations proposed in these two groups of authors, it can be identified that the different literature provides an insight into these initiatives identifying some dimensions through which they can categorize or classify the crowdsourcing initiatives. These dimensions are related to several components of the crowdsourcing process: the different actors involved in the process, the different stages of the process, and the different uses of the crowdsourcing. And following the several models reviewed, they cover different areas: Participants, platforms used, processes included, tasks involved, engagement of the participants, rewards provided, etc.

In this work of selection and classification of the literature and the subsequent analysis it will be selected from these authors the sets of dimensions identified and the grouping of different models they carried out in their works. The review of these dimensions provides an opportunity for going further in the research and deepening into the subject of crowdsourcing.

The approach used in the detailed review and analysis of this literature will address it dividing the works in two groups based on two different points of view used by the different authors in their works. These two approaches for the review of crowdsourcing activities are the following:

- Models that propose an analysis through the elements of the crowdsourcing activities: Process, players, roles, etc.
- Models that propose an analysis through the objective of the crowdsourcing activities

5.1.2 Elements of crowdsourcing activities

In this first group of articles, the common point is that they approach the analysis of crowdsourcing initiatives by identifying different elements that could characterize the tasks or participants of the crowdsourcing initiatives. The elements indicated are the dimensions that will be identified for the development of our model. The different works finally selected provide on one side a compilation of prior documents trying to establish a framework to explain the crowdsourcing processes, and on another side individual models.

The final list of authors and documents included in this part is:

Geiger et al. (2011)

Hosseini, Phalp, Taylor and Ali (2014)

Hosseini, Shahri, Phalp, Taylor and Ali (2015)

Saxton, Oh and Kishore (2013)

Estellés-Arolas and González-Ladrón-de-Guevara (2012)

Brabham (2013)

Nakatsu, Grossman and Iacovou (2014)

Prpić, Shukla, Kietzmann and McCarthy (2015)

Kohler (2015)

Articles with individual models from other authors:

- *Skopik, Schall and Dustdar (2010)*
- *Piezunka and Dahlander (2015)*
- *Boons, Stam and Barkema (2015)*
- *Franzoni and Sauermann (2014)*
- *Marjanovic, Fry and Chataway (2012)*

The models and dimensions that can be found in these articles are now summarized:

5.1.2.1. *Geiger, Seedorf, Schulze, Nickerson, and Schader (2011)*

A first approach that will be analyzed is the one provided by Geiger et al. (2011), where they propose a taxonomy based on the review of 46 cases. Among the works included in their analysis are the models proposed by authors as Doan et al. (2011), Corney et al. (2009), Schenk and Guittard (2011), Rouse (2010) and Piller et al. (2010). The work of Geiger and his colleagues first presents a prototypical

crowdsourcing approach that identifies as areas of review the source of the request, the goal that tries to be achieved and the crowd that answers the request, as it can be seen in Figure 3, which serves as a basis for later delving into a deeper analysis. After that, they base their review of the different cases in a model where initially they identify three elements to which they relate the characteristics of the approaches provided by different authors: the task, the process and the stakeholders.

Figure 3 – Prototypical crowdsourcing approach, Geiger et al. (2011)

Their analysis of the models they selected identified different dimensions of analysis, which they relate to those three elements, showing the validity of their initial classification. Finally they go deeper in their review of the crowdsourcing process to identify four areas of characteristics of the crowdsourcing processes. These four dimensions should serve to classify or characterize the different crowdsourcing initiatives, and they are:

- Preselection of contributors: qualification-based, content specific, or both or none
- Accessibility of peer contributors: contributors are able to modify, assess, view, or none

- Aggregation of contributors: Integrative and selective.
- Remuneration of contributors: fixed, success based or none.

As said, Geiger et al. (2011) propose a taxonomy that classifies the crowdsourcing initiatives based on the process that each project follows.

In their review of existing models they identify several of them, and focus on the processes they propose:

- That is the case the model of Corney et al. (2009), which map crowdsourcing initiatives according to the nature of the task, nature of the crowd, nature of the collaboration and nature of the payment.
- Another author identified for its work is Rouse (2010), who provide a definition of crowdsourcing as a business solution and as a way of outsourcing processes, and identifies as dimensions of analysis the following: forms of motivation, supplier capabilities, and distribution of benefits.
- In their selection, they also include the work of Zwass (2010), who associates crowdsourcing with the co-creation of value.
- As well as the one of Piller et al. (2010) that focus in customer co-creation.
- Other authors in this selection are Malone et al. (2010), who analyze collaborative intelligence through four blocks or genes that describe the what, who, why and how of those type of activities.
- Doan et al. (2011) in their work, provide an approach that focuses on the system characteristics of crowdsourcing platforms.

- Finally, Schenk and Guittard (2011) analyze crowdsourcing activities from two points of view, the nature of the task and the nature of the process.

Dimensions identified:

Geiger et al. (2011):

- Accessibility of peer contributions / Remuneration for contribution / Aggregation of contributions / Pre-selection of contributors
- Task / Process / Stakeholders
- Source of request / Goal that tries to achieve / Crowd

Corney et al. (2009):

- Nature of the task / Nature of collaboration / Nature of the payment / Nature of the crowd

Doan et al. (2011):

- How to combine inputs / How to evaluate inputs / Degree of manual effort / Role of human users / Type of target problem / What users can do / How to recruit and retain users / Standalone process vs. piggyback

Malone et al. (2010):

- Why (incentives) / What (goal) / Who (staffing) / How (structure/process)

Piller et al. (2010):

- Stage in innovation process / Degree of collaboration / Degrees of freedom

Rouse (2010):

- Forms of motivation / Supplier capabilities / Distribution of benefits

Schenk and Guittard (2011)

- Integrative/selective nature of the process / Type of tasks

Zwass (2010):

- Task characteristics / Principal mode of product aggregation / Motivation / Performers / Autonomous vs. sponsored / Process governance

5.1.2.2. *Estellés-Arolas and González-Ladrón-de-Guevara (2012);*

In this taxonomy, the review of 32 different articles provided numerous definitions of crowdsourcing, that provide a basis for the authors to derive a model that entails three elements (Crowd, Initiator and Process) with eight additional characteristics. Next, from the review of the articles, the definitions encountered and the initial model a further version of the model is proposed, in which they provide specific values to the eight characteristics of the crowdsourcing projects. They all are:

- The Crowd
 - Who composes it => It is clearly identified who the crowd is

- What is the task to be carried out => There is a task with a clear goal
- What does it get in return => There is a clear recompense
- The Initiator
 - Who it is => It is clearly identified (company or institution)
 - What the initiator gets in return => The compensation is clearly defined
- The Process
 - What type of process it is => The process is of participative type and it is assigned online
 - What type of call it is used => It is an open call of participative type
 - What the medium used is => It is internet

This final model is verified against 11 crowdsourcing cases, checking the validity all of them in most cases.

Dimensions identified:

Estellés-Arolas and González-Ladrón-de-Guevara (2012):

- Crowd / Initiator / Process

5.1.2.3. *Brabham (2013)*

In his book *Crowdsourcing* (2013), Brabham reviews the work of different authors and how they categorize some elements of crowdsourcing activities. He first analyzes some typologies of crowds provided by other authors, as the work of Carr

(2010) that identifies six categories of crowd based on the kind of labor they perform for various projects and how the individuals of the crowd interact among themselves: social-production crowds, averaging crowds, data-mine crowds, networking crowds, transactional crowds and event crowds. Then the work of Martineau (2012), which classifies them by the motivation for participating by the crowds: communals, utilizers, aspirers and lurkers. And finally the work of Kazai et al. (2011), which identify five types of workers among the crowd: spammer, sloppy, incompetent, competent and diligent.

He also carries out an analysis of the work of other authors that identify types of crowdsourcing activities, which are already included in this summary of models and taxonomies.

5.1.2.4. *Saxton, Oh and Kishore (2013)*

In their article, Saxton et al. (2013) identify crowdsourcing as the intersection between three elements: outsourcing of companies, the existence of a crowd and the possibilities of the social web or the advanced internet technologies. It is the combination of these elements combined in such a way that represents those initiatives, as when the advanced internet technologies enable organizations to outsource an activity to the crowd or the collective knowledge of the community, helping them to provide a service or produce some goods.

Their study analyzes over 100 crowdsourcing websites and identifies four dimensions to classify their activities:

- Service or product being outsourced
- Role played by the crowd/community users
- Level of collaboration of the crowd
- System of managerial control used to interact with the crowd. In these dimension they analyze three areas, to identify how the organizations engage the crowd participants, since they do not have an employment relationship, but a temporary one. These three aspects are: the compensation schemes used, the systems used to build trust and the tools used to exchange and evaluate the ideas or proposals, which they categorize as voting and commenting.

Based on these dimensions, they are able to provide a taxonomy that serves them as a tool to classify the crowdsourcing initiatives in nine models:

- Intermediary model
- Citizen media production model
- Collaborative software development model
- Digital goods sales model
- Production design model
- Peer-to-peer social financing model
- Consumer report model
- Knowledge base building model
- Collaborative science project model

In summary, the authors classify the crowdsourcing activities according to the inter-relation of the managerial control systems and its role in linking and

engaging the crowd in the collaboration to provide the service or produce the product outsourced.

Dimensions identified:

Saxton et al. (2013):

- Service or product being outsourced / Role of community users / Level of collaboration / Managerial control system / Trust-building system (Managerial control systems)

5.1.2.5. *Hosseini , Phalp, Taylor and Ali (2014) / Hosseini, Shahri, Phalp, Taylor and Ali (2015)*

In the different articles and conference proceedings written by Hosseini and other researchers (Hosseini et al., 2014 and Hosseini et al. 2015) they propose a model for crowdsourcing processes. Based on their review of 113 cases they identify a framework with *four pillars* that are the basis where all crowdsourcing projects should stand:

- The crowd
- The crowdsourcer
- The crowdsourcing task
- The crowdsourcing platform

These pillars identified by the authors while needed are not necessarily sufficient for the development of a crowdsourcing project. Nevertheless, each one of them plays an important role, as they will define the methodology, the quality of the

result and the speed of the response. In the article of Hosseini et al. (2014) the authors delve into their analysis by identifying a set of features that define each pillar:

Crowd: For the crowd, the features identified by Hosseini et al (2014) that allow characterization of the participants are:

- Diversity: being different or varied (spatial, gender, age, expertise)
- Unknown-ness or anonymity: The crowd might not know the crowdsourcer and the crowdsourcer might not know the crowd
- Largeness: Big amount of participants and a comprehensive sample
- Undefined-ness: No borders set, randomness
- Suitability: How fit is the crowd for the crowdsourcing activity (competence, collaborating, volunteers, motivation)

Crowdsourcer: For the pillar of the crowdsourcer, the specific features that could define each case are based on how it launches the crowdsourcing activity and on which grounds:

- Incentives provision: Providing an incentive to engage the participants (financial, social and entertainment-gaming incentives)
- Open call: Open to everyone in the general public
- Ethicality provision: In the relationship with the crowd, the crowdsourcer allows the participants to opt-out, or gives them feedback or ensures no harm for their participation
- Privacy provision: No private or personal information from the crowdsourcer will be disclosed to anyone

Crowdsourcing tasks: Different types of tasks can be involved in the outsourcing and in different ways. The more general approach for the activity that is outsourced to the crowd will be discussed in a later group of models, while at this point the authors look at the form in which it is proposed to the crowd and the characteristics of that activity:

- Traditional operation: It is a standard activity of the company that it is done in the same way as it would have been done inside the organization or by an outside agent
- Outsourcing task: If not done by the crowd, it would be outsourced to an outside organization
- Modularity: A complex task is broken down into modules that are proposed to be carried out by the crowd
- Complexity: The task proposed to the crowd can be a simple one or a more complex one
- Solvability: The capability of the task to be solved
- Automation characteristic: Usually tasks outsourced to the crowd would be tasks either difficult or expensive to automate
- User-driven: The user has the control so it can provide a solution to a problem, it can innovate or it can participate in a creation process
- Contribution type: Individual process or collaborating one

Crowdsourcing platform: The fourth pillar is the crowdsourcing platform, as the means through which the interaction takes place between the other three pillars. The features of internet and the web have been the reason for the development of these crowdsourcing activities, with websites being the platforms

for such exchange. The characteristics of the websites can be organized around four areas, associated with the each of the four pillars:

- Crowd-related interactions
- Crowdsourcer-related interactions
- Task-related facilities
- Platform-related facilities

Additionally, Hosseini et al. (2015) also identify other aspects that will influence the process, such as sample size, quality of participants, efficiency and effectiveness of the platform, issue to be solved, crowdsourcers analysis, the jury for the decision, and others. These aspects play a big role in the success or failure of a crowdsourcing project, so the definition of the basis of the process will be fundamental for the project development and for reaching the desired results.

Dimensions identified:

Hosseini et al. (2014):

- Crowd / Crowdsourcer / Crowdsourced task / Crowdsourcing platform

Each of these dimensions has different sub-dimensions in which they can be divided as it has been presented, but for the analysis carried out in this work they provide too much detail initially to consider them.

5.1.2.6. *Nakatsu, Grossman and Iacovou (2014)*

A further analysis is the one proposed by Nakatsu et al. (2014) through their study on a number of articles on crowdsourcing. Their work is carried out based on a model that consists of four steps:

- A task or problem to be solved is identified by the requestor
- The requestor broadcasts the task or problem. This request is broadcasted online, as an intrinsic characteristic of crowdsourcing
- The crowd carries out the task or solves the problem
- The requestor selects the best solution (selective crowdsourcing) or aggregates the work of the crowd (integrative crowdsourcing)

Then, based on this model, they carry out an analysis of the complexity of the task taken on by the crowd, and propose a taxonomy for classification of the crowdsourcing activities. In their proposal, they identify three dimensions for classification of the activities along with two possible values for those dimensions:

- Task structure: Well-structured tasks vs. unstructured tasks
- Task interdependence: Independent vs. interdependent
- Task commitment: High vs. low commitment

	Independent Tasks (Individuals)	Interdependent Tasks (Virtual Communities)
Well-structured Tasks (The solution to the problem is well-defined.)	I. Contractual Hiring <i>Low Commitment:</i> <ul style="list-style-type: none"> Human intelligence tasks Crowdsharing marketplaces <i>High Commitment:</i> <ul style="list-style-type: none"> Online employment platforms 	II. Distributed Problem-solving (Additive/Pooled Coordination) <i>Low Commitment:</i> <ul style="list-style-type: none"> Geo-located data collection Distributed knowledge gathering Crowdfunding
Unstructured Tasks (There is no known or well-defined solution to the problem.)	III. New Idea Generation – Solo <i>Low Commitment:</i> <ul style="list-style-type: none"> Consumer-driven innovation <i>High Commitment:</i> <ul style="list-style-type: none"> Online problem-solving platforms Contests 	IV. Collaboration (Reciprocal Coordination) <i>Low Commitment:</i> <ul style="list-style-type: none"> Real-time idea jams <i>High Commitment:</i> <ul style="list-style-type: none"> Open source software development Open source design of hardware Open content projects

Figure 4 – A taxonomy of crowdsourcing based on task characteristics, Nakatsu et al. (2014)

With the possible combination of the first two dimensions they establish four cases of crowdsourcing activities, which they later delve deeper into them with the third dimension. The four cases are:

- 1) Contractual Hiring (Well-structured + Independent);
- 2) Distributed Problem-solving (Well-structured + Interdependent);
- 3) New Idea Generation – Solo (Unstructured + Independent);
- 4) Collaboration (Unstructured + Interdependent).

Among the models reviewed by Nakatsu et al. (2014), they include some already analyzed by Geiger et al. (2011), but they also analyze others, as it is the case of Brabham (2013) who focuses on solving organizational problems and performing organizational tasks. They include also the case of Surowiecki (2004) who determines three types of problems that are appropriate to be solved by the crowd

in the reviewed area of problem solving. And finally the study of Vukovic (2009) was selected, which identifies two dimensions for the analysis of a crowdsourcing platform, which are the function being crowdsourced and the mode in which it is done.

Dimensions identified:

Nakatsu et al. (2014):

- Structured tasks
- Dependency of tasks

Surowiecki (2004):

- Type of problem to be solved

Vukovic (2009):

- Crowdsourced function
- Mode

5.1.2.7. *Prpić, Shukla, Kietzmann and McCarthy (2015)*

Prpić et al. (2015) develop a model of crowdsourcing alternatives according to two dimensions: content and contributions. Both dimensions can range between different values, as the content can go from being subjective to objective, while the contributions vary between being aggregated and being filtered by the organization (figure 5).

Figure 5 – Crowdsourcing alternatives, Prpić et al. (2015)

Another concept presented by these authors is that of crowd capital perspective, which they define as a three-stage model that consists on constructing a crowd, developing a crowd and harnessing crowd capital.

Dimensions identified:

Prpić et al. (2014):

- Content
- Contributions
- Crowd capital perspective

5.1.2.8. Kohler (2015)

In his work of 2015, Kohler takes on the study of business models based in crowdsourcing and proposes to analyze them in two dimensions: through the value

created and the value that is captured by the initiatives, and through the mechanisms that they have. One additional activity that the authors also carry out is the review of the role of customers and companies in such models.

Among the models identified by the author, it is included the one from Garcia Martinez (2015), which proposes a framework based on the multidimensional perspective of solver engagement. The model is defined through three dimensions: physical, emotional and cognitive, in the process shown in figure 6.

Figure 6 – Solver engagement model, Garcia Martinez (2015).

Another of the models included in the review of Kohler is the one of Ford et al. (2015). In it, crowdsourcing is studied as a new and original source of external labour, and they establish two magnitudes for the classification of crowdsourcing activities: the degree of involvement and the employment mechanism.

Figure 7- Degrees of employing non-employees in organizational processes. Ford et al. (2015)

Also in the study of Kohler it is included the work of Hosseini et al. (2014) representing the different configurations of crowdsourcing by means of the four mentioned pillars: the crowdsourcer, the crowd, the crowdsourced task and the crowdsourcing platform.

Dimensions identified:

Kohler (2015):

- Value Creation
- Value Capture

Ford et al. (2015):

- Degree of involvement of external labor
- Employment mechanism of external labor

Garcia Martinez (2015):

- Solver engagement

5.1.2.9. *Models from other authors*

Skopik, Schall and Dustdar (2010)

Skopik et al. (2010) provide a framework for business with a service orientation in collaborative environments and for the interactions between people and services. It is a three-layer model based on the notion of trust that could be linked to the concept of legitimacy. The structure of their model establishes at the bottom an interaction layer, then the personal trust layer is the middle one and finally on the top is the trust projection layer.

Piezunka and Dahlander (2015)

In their work, Piezunka and Dahlander (2015) focus on a specific activity included in the possibilities of the use of crowdsourcing, as it is distant search. The objective to do so is in order to assess attention that the organization pays to the solutions or contributions coming from the crowd. And it is based on a model determined by three dimensions of distance: content, structural and personal.

Boons, Stam and Barkema (2015)

Boons et al. (2015) provide a specific approach for crowdsourcing platforms. In their proposal they build a model for group engagement that identifies two drivers for promoting activity of the members, which are the feelings of pride and respect.

Franzoni and Sauermann (2014)

The framework that is established for collaborative projects for production of knowledge by Franzoni and Sauermann (2014) includes a classification of this activities based on two magnitudes: the degree openness existing in the project participation (closed vs. open) and the degree of openness that is established in the disclosure of intermediate inputs (closed vs. open), as seen in figure 8.

Figure 8 –Knowledge production regimes with different degrees of openness, Franzoni and Sauerman (2014)

Marjanovic, Fry and Chataway (2012)

Marjanovic et al. (2012) identify crowdsourcing as one modality of open innovation, as opposed to closed innovation, and the other modalities being the outsourcing and open source approaches. In the model they propose, they define the

crowdsourcing activities according to four key characteristics: roles of seekers and solvers, structures of rewards and incentives, risks and risk management, and the IP management approach, being those the dimensions for analysis that they identify.

Figure 9 – Different types of “open innovation”: open source, outsourcing and crowdsourcing, Marjanovic et al. (2012)

Dimensions identified:

Skopik et al. (2010):

- Personal Trust layer
- Interaction layer
- Trust Projection Layer

Piezunka and Dahlander (2015):

- Content distance
- Structural distance
- Personal distance

Boons et al. (2015):

- Feelings of pride
- Feelings of respect

Franzoni and Sauermann (2014):

- Disclosure of intermediate outputs
- Openness of project participation

Marjanovic et al. (2012):

- Risk and risk Management
- Rewards and incentives structures
- Roles of seekers and solvers
- IP management approach

5.1.3. Objectives of crowdsourcing activities

This section will discuss another set of authors that bring a different point of view for their analysis of crowdsourcing initiatives. This new approach is focused on the review of these activities examining what is the application that is done of the crowdsourcing tool. The prior review of the literature focused on the processes, players, tasks, etc., so this new approach offers a complementarity to the first one, in the objective of taking a complete look at crowdsourcing. Among the literature in this field they can be identified the articles of Afuah and Tucci (2012), Brabham (2013), Hossain and Kauranen (2015), Boudreau and Lakhani (2013) and Palacios et al. (2016), as well as the models they identify.

One aspect to consider is that a significant amount of this literature has only been addressing some facets of the process of innovation provided. As in the previous section, these different works provide some models from a compilation of prior documents or directly a model. Each of these models identifies a set of dimensions that help classifying or categorizing the objectives of crowdsourcing activities.

5.1.3.1. *Brabham (2013)*

Among the works using this point of view the work of Brabham (2013) can be taken into account. This book was already included in the previous section, on the parts where it provided a model for review of crowdsourcing processes or a review of models provided by other authors. When it is included in this section is for the parts where he reviews a series of works of different authors that identify types of Crowdsourcing activities. The first one he identifies is Howe (2008), in his book *Why the Power of the Crowd is driving the Future of Business*, where four types of crowdsourcing are proposed, according to the function they are applied for:

- Crowd wisdom
- Crowd creation
- Crowd voting
- Crowd funding

A second classification that Brabham identifies is the one developed by Ross Dawson, as presented in an interview (Davey, 2010), where six functions are identified for crowdsourcing:

- Distributed innovation platforms
- Idea platforms
- Innovation prizes
- Content markets
- Prediction markets
- Competition platforms

Finally, Brabham itself proposes another classification of crowdsourcing activities, now based on the kind of problems being solved. Brabham establishes four approaches where organizations can use crowdsourcing to solve four general types of problems related to information management or ideation:

- Knowledge discovery and management: the crowd has to find information and collect it into a common location and format.
- Broadcast search: The crowd is in charge of solving empirical problems.
- Peer-vetted creative production: The crowd has to create and select creative ideas.
- Distributed-human-intelligence tasking: The crowd has to analyze large amounts of information.

Dimensions identified:

Brabham (2013):

- Organizational problem to solve

Howe (2008):

- Function of application of crowdsourcing

Dawson (Davey, 2010):

- Function of application of crowdsourcing

5.1.3.2. *Hossain and Kauranen (2015)*

In this study the authors carried out a review of more than 300 articles, which included both in listed and non-listed journals and conference proceedings, where they reviewed different literature about crowdsourcing, trying to advance in the exploration of this field and its use in organizations. Their comprehensive review finally provided a list of applications of crowdsourcing, as a result of the work carried out:

- Idea generation. Within this two separate forms happen: Idea competitions and ideation with collective intelligence.
- Microtasking: It is defined as a system in which users can select and complete small tasks for monetary or non-monetary rewards (Kittur et al., 2008). Also in this application, Olsen and Carmel (2013) identified three majors phases of it:
 - Evaluation phase: Identify which activities can be crowdsourced.

- Task Design: Decomposition of tasks and aggregation into micro-tasks.
- Integration: How to integrate the work with existing processes.
- Open Source Software (OSS). As it would be the case of a computer software collectively developed for the greater good of people, and whose source code is public and can be used free of cost.
- Public participation: As identified by several authors (Brabham, 2009; Hilgers and Ihl, 2010; Bugs et al. 2010; Adams, 2011), crowdsourcing is a model to facilitate participation in public projects, to engage citizens and facilitate an open dialogue between citizens and decision-makers.
- Citizen science: The crowd is involved in a collaborative research to find solutions to real-life problems (Wiggins and Crowston, 2011).
- Citizen journalism: In this application, crowdsourcing becomes an alternative media to professional journalism (Muthukumaraswamy, 2010)
- Wikies, or websites where everyone can contribute to its contents.

Dimensions identified:

Hossain and Kauranen (2015):

- Application of crowdsourcing

5.1.3.3. *Other authors*

Boudreau and Lakhani (2013)

The classification method that Boudreau and Lakhani (2013) propose for crowdsourcing activities divides them in four distinctive forms according to their objective:

- Contests
- Collaborative communities
- Complementors
- Labor markets

Bigham, Bernstein and Adar (2015)

One other method of classification is the one provided by Bigham et al. (2015), who identify three main directions on the application of collective intelligence:

- Directed crowdsourcing: An individual or an organization tries to gather a large group of people and instruct them to carry out a task.
- Collaborative crowdsourcing: The group of people unites with a common goal and establishes their work and process to follow.
- Passive crowdsourcing: The participants are not gathered, but there information accessible on their collective behavior.

Dimensions identified:

Boudreau and Lakhani (2013):

- Purpose

Bigham et al. (2015):

- Direction of crowdsourcing activities

5.1.3.4. *Palacios, Martinez-Corral, Nisar and Grijalvo (2016)*

This work was already reviewed in part in Chapter 4, as it corresponds to one of the articles where the results of this thesis are partially published. As indicated then, it tried to cover part of the research gap that existed in the field of crowdsourcing, where a relevant amount of the publications on this subject have been dealing with just certain aspects of the innovation process. So another insight into the crowdsourcing objective is proposed when it is indicated that “organizations are increasingly using the crowd for idea generation, finding novel solutions and financing new projects to maintain innovative action” (Palacios et al. , 2016, p. 1834).

In the review of existing research it was identified little understanding on the question of what organizations do to distinguish themselves from competing organizations to acquire resources or solutions through crowdsourcing initiatives. This gap in the research made the authors raise the question of the way organizations manage to obtain these resources with that approach. Part of the response has to do with the process of communicating to the numerous stakeholders the intrinsic value of the project, which is the analysis they carried out on a first step.

Trying to provide clarity into this area, the article of Palacios et al. (2016) identified five areas as emerging trends in the crowdsourcing based activities.

- Problem solving.
- Learning paradigms.
- Open innovation program.
- New product development.
- Collaborative initiatives.

A specific activity, crowdfunding was also identified but the authors did not address it, given that the literature on it is of a different body.

Dimensions identified:

Palacios et al. (2016):

- Areas of application of crowdsourcing

5.2. Analysis of crowdsourcing dimensions: Detailed model

5.2.1. Basis for the detailed model for crowdsourcing analysis

The objective of the thesis, as the gap it is trying to fill in, is the analysis of the impact of crowdsourcing activities in organizations. In the previous chapter, the development of the framework model established three different levels in the organizations where crowdsourcing activities could impact them: the micro, meso and macro levels. The analysis is based on the assertion that the creation of a new

organizational form demanded working at three separate levels identified: micro, meso and macro (Tracey et al., 2011). This new approach applied for problem solving and other needs in organizations, that crowdsourcing represents, is linked to new organizational forms created, which have a relationship with entrepreneurship processes and open innovation initiatives (Tracey et al., 2011). The organizations that opt to apply crowdsourcing do so looking for benefits in their processes, but can apply it at different stages of the processes. When applying it and based on how it is done, it affects the company at the various levels mentioned.

From the starting point that represents the framework model, with the three organizational levels, and the complete list of dimensions taken from the different crowdsourcing models selected among the literature, a detailed analysis can now be carried out. The set of dimensions identified will now be analyzed to determine with which level of the organizational form is related and to identify a set of elements (corresponding to sub-levels) per each of the three levels. This detailed classification will be the basis for the model that the thesis proposes, which should help in the analysis of the impact on organizations.

In the analysis of the dimensions, the results of chapter 4 will be used, as they provided keys for that allocation, as well as the model included in Palacios et al. (2016). Both models include the three levels that can be used to link with the different dimensions identified, with already some elements. So in my process for development of the detailed model, the list of dimensions corresponding to each level will now be analyzed in order to identify a set of elements (corresponding to sub-levels) per each of the three levels.

To facilitate this classification it is needed to use some details of the three organizational levels. In chapter 4, it was already identified some of the requirements for each of them. At the micro or individual level, it pertained to opportunity recognition (Palacios et al. 2016), by defining the problem in a different form and then developing a new solution. At the meso or organizational level, it related to the organizational form design (Tracey et al., 2011) or to its mechanics (Child and Rodrigues, 2003). And at the macro or societal level, it concerned the legitimacy of the organizational form (Tracey et al., 2011).

And then in the model provided by Palacios et al. (2016), it is found a more developed version of the framework model, as it already presents some elements that can be seen in figure 10, but still does not reach the detailed level required:

Figure 10 – Mapping out the components in crowdsourcing, Palacios et al. (2016)

This model included in Palacios et al. (2016) already provided some keys for establishing the relation with crowdsourcing for the three different levels.

In the end, this model approach should serve for current and future models, as the study of the crowdsourcing area evolves.

5.2.2. Analysis and classification of dimensions

The analysis carried out in this section classifies all the dimensions from crowdsourcing models and taxonomies identified earlier into the three organizational levels determined. For that classification, it will be used the characteristics already identified for each level in the framework model and in Palacios et al. (2016):

Micro

- Opportunity recognition
- Motivation of the crowd or solution provider
- Framing the issue (feedback mechanism, timeline, open call)
- Engagement mechanism (contest, timebound project, reward/reputation, feed-back, perceived legitimacy)

Meso:

- Design of the organization
- Mechanics of the organization
- Organizational factors (design, form, boundaries, capabilities, organizational learning)
- Definition of objectives (problem solving, learning paradigm, open innovation, new product development, collaborative initiative)

Macro:

- Governance practices
- Code of conduct
- Legitimacy
- Environmental factors
- Ethical issues
- Legal framework

5.2.2.1. *Dimensions per elements and organizational level*

The detailed results are presented in the following tables with the results classified per organizational level and grouped by the elements of each level:

Dimensions and references per element at Micro level

Dimensions related to the task	
Reference	Dimensions
Corney et al. (2009)	Nature of the task
Estellés-Arolas and González-Ladrón-de-Guevara (2012)	Process
Geiger et al. (2011)	Task / Process
Nakatsu et al. (2014)	Structured tasks / Dependency of tasks
Quinn and Bederson (2011)	Process order / Task-request cardinality
Schenk and Guittard (2011)	Type of tasks
Zwass (2010)	Task characteristics / Principal mode of product aggregation
Dimensions based on the inputs and outputs	
Reference	Dimensions
Doan et al. (2011)	How to combine inputs / How to evaluate inputs

Franzoni and Sauermann (2014)	Disclosure of intermediate outputs
-------------------------------	------------------------------------

Dimensions related with the mode of crowd participation	
Reference	Dimensions
Doan et al. (2011)	Degree of manual effort / Role of human users
Franzoni and Sauermann (2014)	Openness of project participation
Geiger et al. (2011)	Accessibility of peer contributions
Marjanovic et al. (2012)	Risk and risk Management
Piezunka and Dahlander (2015)	Content distance

Dimensions related to the motivational approach	
Reference	Dimensions
Boons et al. (2015)	Feelings of pride and respect
Ford et al. (2015),	Degree of involvement of external labor
Garcia Martinez (2015)	Engagement of solver
Piezunka and Dahlander (2015)	Personal distance
Prpić et al. (2015)	Content
Quinn and Bederson (2011)	Motivation
Rouse (2010)	Forms of motivation
Skopik et al. (2010)	Personal Trust layer
Zwass (2010)	Motivation

Dimensions related with rewards or payments	
Reference	Dimensions
Corney et al. (2009)	Nature of the payment
Geiger et al. (2011)	Remuneration for contribution
Malone et al. (2010)	Why (incentives)
Marjanovic et al. (2012)	Rewards and incentives structures
Rouse (2010)	Distribution of benefits

Dimensions related with the way in which the crowd carries out the task	
Reference	Dimensions
Doan et al. (2011)	How to recruit and retain users / Standalone vs. piggyback
Skopik et al. (2010)	Interaction layer
Vukovic (2009)	Mode
Zwass (2010)	Autonomous vs. sponsored

Dimensions related with the platform and the layer for interacting with it	
Reference	Dimensions
Hosseini et al. (2014)	Crowdsourcing platform

Skopik et al. (2010)

Interaction layer

Table 3 - Dimensions and references per element at Micro level

Dimensions and references per element at Meso level

Dimensions related to the specific crowdsourcing activity proposed to the crowd	
Reference	Dimensions
Bigham et al. (2015)	Direction of crowdsourcing activities
Boudreau and Lakhani (2013)	Purpose
Corney et al. (2009)	Nature of collaboration
Geiger et al. (2011)	Aggregation of contributions / Goal that tries to achieve
Hosseini et al. (2014)	Crowdsourced task
Prpić et al. (2015)	Contributions
Quinn and Bederson (2011)	Aggregation
Saxton et al. (2013)	Service or product being outsourced
Vukovic (2009)	Crowdsourced function
Dimensions related to the existing problem that is solved by the crowdsourced task	
Brabham (2013)	Organizational problem to solve
Dawson (2010)	Function of application of crowdsourcing
Doan et al. (2011)	Type of target problem / What users can do
Geiger et al. (2011)	Source of request
Hossain and Kauranen (2015)	Application of crowdsourcing
Howe (2008)	Function of application of crowdsourcing
Kohler (2015)	Value Creation / Value Capture
Malone et al. (2010)	What (goal)
Palacios et al. (2016)	Areas of application of crowdsourcing
Piller et al. (2010)	Stage in innovation process /Degree of collaboration
Surowiecki (2004)	Type of problem to be solved
Dimensions related with the governance of the process itself and with the relationship with the crowd	
Ford et al. (2015)	Employment mechanism of external labor
Malone et al. (2010)	How (structure/process)
Marjanovic et al. (2012)	IP management approach
Piezunka and Dahlander (2015)	Structural distance
Piller et al. (2010)	Degrees of freedom
Quinn and Bederson (2011)	Quality control / Human skill
Rouse (2010)	Supplier capabilities

Saxton et al. (2013)	Level of collaboration / Managerial control system
Schenk and Guittard (2011)	Integrative/selective nature of the process
Zwass (2010)	Process governance
Dimensions related with the crowdsourcers	
Estellés-Arolas and González-Ladrón-de-Guevara (2012)	Initiator
Geiger et al. (2011)	Stakeholders
Hosseini et al. (2014)	Crowdsourcer

Table 4 - Dimensions and references per element at Meso level

Dimensions and references per element at Macro level

Dimensions related with Legitimacy	
Reference	Dimensions
Boons et al. (2015)	Feelings of pride Feelings of respect
Kohler (2015)	Value Creation Value Capture
Saxton et al. (2013)	Trust-building system (Managerial control systems)
Skopik et al. (2010)	Trust Projection Layer
Dimensions related with the governance of the process and legal framework	
Ford et al. (2015)	Employment mechanism of external labor
Marjanovic et al. (2012)	IP management approach
Quinn and Bederson (2011)	Quality control
Zwass (2010)	Process governance

Table 5 - Dimensions and references per element at Macro level *

5.2.2.2. *Elements of organizational levels*

Once classified in the three organizational levels, the analysis of the results allows the identification within each level of certain groups of dimensions. These

* This table is included in an article submitted to the International Journal of Entrepreneurial Behavior & Research for review

groups will be categorized by some characteristic that will determine the elements that constitute the detailed model.

The results of that analysis provide the following elements of the organizational levels as a finding of the research carried out (**Note:** The lists of elements of the three levels shown below are partial results of the thesis that have been included in an article submitted to the International Journal of Entrepreneurial Behavior & Research for review):

- At **micro level** the elements that allow the classification of dimensions are:
 - Dimensions related to the task
 - Dimensions based on the inputs and outputs
 - Dimensions linked to the crowd/participants in the crowdsourced task
 - Dimensions related with the mode of crowd participation
 - Dimensions related to the motivational approach
 - Dimensions related with rewards or payments
 - Dimensions related with the way in which the crowd carries out the task
 - Dimensions related with the platform and the layer for interaction with it
- At **meso level** the elements that allow the classification of dimensions are:
 - Dimensions related to the specific crowdsourcing activity that is proposed to the crowd
 - Dimensions linked with the existing problem that is later solved by the crowdsourced task

- Dimensions related with the governance of the process itself and with the relationship with the crowd
- Dimensions related with the crowdsourcers
- At **macro level** the elements that allow the classification of dimensions are:
 - Dimensions are related with the legitimacy of the organization among the stakeholders (crowd and crowdsourcers)
 - Dimensions that are related with the governance of the process and the legal framework

The prior tables included the dimensions, together with the references that included them. Given that for some of the dimensions several authors had identified them, in the tables some of the dimensions are repeated and appear two or more times. A simplification of the tables, not including the references gives the following results:

Dimensions per element at Micro level

Task
Process
Process order
Task
Nature of the task
Task characteristics
Type of tasks
Structured tasks
Dependency of tasks
Task-request cardinality
Principal mode of product aggregation

Inputs / Outputs
How to combine inputs
How to evaluate inputs
Disclosure of intermediate outputs
Crowd/participants
Crowd
Nature of the Crowd
Pre-selection of contributors
Stakeholders
Who (staffing)
Roles of seekers and solvers
Crowd capital perspective
Supplier capabilities
Role of community users
Performers
Crowd participation mode
Degree of manual effort
Role of human users
Openness of project participation
Accessibility of peer contributions
Risk and risk Management
Content distance
Motivational approach
Feelings of pride and respect
Degree of involvement of external labor
Engagement of solver
Personal distance
Content
Motivation
Forms of motivation
Personal Trust layer

Rewards or payments
Nature of the payment
Remuneration for contribution
Why (incentives)
Rewards and incentives structures
Distribution of benefits
How task is carried out by the crowd
How to recruit and retain users
Standalone vs. piggyback
Interaction layer
Mode
Autonomous vs. sponsored
Platform and interaction layer
Crowdsourcing platform
Interaction layer

Table 6 - Dimensions per element at Micro level

Dimensions per element at Meso level

Activity proposed (to the crowd)
Purpose
Goal that tries to achieve
Direction of crowdsourcing activities
Crowdsourced task
Crowdsourced function
Nature of collaboration
Aggregation of contributions
Contributions
Aggregation
Service or product being outsourced
Existing problem
Organizational problem to solve

Function of application of crowdsourcing
Type of target problem
Type of problem to be solved
Source of request
Application of crowdsourcing
Function of application of crowdsourcing
What (goal)
What users can do
Value Creation
Value Capture
Areas of application of crowdsourcing
Stage in innovation process
Degree of collaboration
Governance process / relationship with the crowd
Employment mechanism of external labor
How (structure/process)
IP management approach
Structural distance
Degrees of freedom
Quality control
Human skill
Supplier capabilities
Level of collaboration
Managerial control system
Integrative/selective nature of the process
Process governance
Crowdsourcers
Initiator
Stakeholders
Crowdsourcer

Table 7 - Dimensions per element at Meso level

Dimensions per element at Macro level

Legitimacy
Feelings of pride
Feelings of respect
Value Creation
Value Capture
Trust-building system (Managerial control systems)
Trust Projection Layer
Governance of the process / legal framework
Employment mechanism of external labor
IP management approach
Quality control
Process governance

Table 8 - Dimensions per element at Macro level

5.2.2.3. *Correspondence between dimensions and elements of organizational levels*

A further look into the results can be carried out when it is analyzed the combination of dimensions that each group of authors include in their work. This point of view can identify possible links among levels and elements, or it can identify the need to combine elements from different levels to ensure positive results:

	Micro								Meso				Macro	
	Task	Inputs / Outputs	Crowd / participants	Crowd participation mode	Motivational approach	Rewards or payments	How task is carried out	Platform and interaction layer	Activity proposed	Existing problem	Relationship with Crowd	Crowd-sourcers	Legitimacy	Governance process / Legal
Zwass (2010)	X		X		X		X				X			X
Corney et al. (2009)	X		X			X			X					
Geiger et al. (2011)	X		X			X			X	X		X		
Estellés-Arolas and González-Ladrón-de-Guevara (2012)	X		X									X		
Quinn and Bederson (2011)	X				X				X		X			X
Schenk and Guittard (2011)	X										X			
Nakatsu et al. (2014)	X													
Doan et al. (2011)		X		X			X			X				
Franzoni and Sauermann (2014)		X		X										
Marjanovic et al. (2012)			X	X		X					X			X
Rouse (2010)			X		X	X					X			
Prpić et al. (2015)			X		X				X					
Malone et al. (2010)			X			X				X	X		X	
Hosseini et al. (2014)			X					X	X			X		
Saxton et al. (2013)			X						X		X		X	
Piezunka and Dahlander (2015)				X	X						X			
Skopik et al. (2010)					X		X	X					X	
Ford et al. (2015)					X						X			X
Boons et al. (2015)					X									
Garcia Martinez (2015)					X									

Vukovic (2009)							X		X					
Boudreau and Lakhani (2013)									X					
Bigham et al. (2015)									X					
Piller et al. (2010)										X	X			
Kohler (2015)										X			X	
Surowiecki (2004)										X				
Howe (2010)										X				
Dawson (2010)										X				
Brabham (2013)										X				
Hossain and Kauranen (2015)										X				
Palacios et al. (2016)										X				

Table 9 - List of relationships articles–elements of organizational models *

The application of the approach proposed by the model already provides some information on the relationships between the elements of the three levels and the publications that included models and dimensions. From this table some conclusions can be extracted, by analyzing the elements in dimensions of each level, the dates of the publications and the interrelations between levels.

* This table is included in an article submitted to the International Journal of Entrepreneurial Behavior & Research for review

At the micro level the most common elements for the dimensions are the *crowd*, *motivational approach* and the *task*, as 10, 9 and 7 of the 21 authors that identified dimensions in this area cite them respectively. Additionally, in the chronology of the publications, the dimensions referring to *motivational approach* are included in works of 2010 and then later in works of 2015, as an area that regained relevance lately. The dimensions included in the rest of elements of the micro level are mostly from publications between the years 2009 and 2012. Therefore we can see this level as one that had importance for the classification of crowdsourcing activities for the earlier authors, except for the *motivational approach* that gained relevance lately.

The elements of the meso level they are all considered frequently (between 9 and 11 publications) except for *crowdsourcers*, with only 3 references among the 26 publications of this level. It is also present recurrently between 2009 and 2015, with dimensions corresponding to all elements being identified along those years.

As for the macro level, the different models do not consider it solely. They present a dimension that measures the impact at this level together with other dimensions at other levels. It is a level addressed by only 8 of the 31 publications.

In the analysis of possible correlation between elements of different levels, we can highlight some:

- Recurrence of models that include dimensions for *governance issues* (macro) – *relationship with crowd* (meso) – *motivational approach* (micro), identifying the importance of motivating the crowd and the relationship with it.

- Recurrence of models that include dimensions for *crowd* – *rewards/ payments* (both micro), identifying the link between those two.
- The *crowd* (micro) has a high correspondence with the *activity proposed* (meso) and with the *task* (micro)
- The element *existing problems* (meso) is proposed frequently as a stand-alone category with no dimensions of other elements in half of the cases.
- The *activity proposed* (meso) and the *crowd* (micro) appear together in half of the models that either one is included.
- The *relationship with crowd* (meso) has a high correspondence with the *crowd* (micro) besides with the *motivational approach* (micro)

Finally it can be observed that models which concern mostly the processes, tasks to be carried out and steps being taken (Doan et al., 2011, Corney et al., 2009, Geiger et al., 2011, and others) are more related to micro and some meso elements. Then, in the case of other crowdsourcing models related with organization characteristics it can be seen that there is a stronger link with meso elements and sometimes even with macro elements (Saxton et al., 2013, and others).

5.2.3. Detailed model proposal

In the previous sections the elements of each organizational level could be identified based on the dimensions of the crowdsourcing models and taxonomies. This result of the research is now employed for the development of the detailed model, when those elements are included.

Therefore the detailed model can now be presented:

Figure 11- Proposal of detailed model *

This model represents an approach for crowdsourcing activities and the impact on organizations, which tries to provide a framework where any crowdsourcing model can be integrated. The dimensions included in any model shall be able to be linked to the organizational levels and their elements presented in this model.

* This figure is included in an article submitted to the International Journal of Entrepreneurial Behavior & Research for review

6. Case-based qualitative validation

Once the detailed model has been developed it is time to validate it with real cases. The validation that is going to be discussed now is a qualitative one and it will be carried out based on a case study, as the one related to the crowdsourcing initiatives of one of the main players in the banking industry in Spain.

6.1. The BBVA case: Summary of case study and analysis

The case study reviews a series of crowdsourcing activities of the BBVA bank, and the evolution they experienced. The initiatives taken and the changes produced during the path followed showed an evolution that incorporates elements of the thesis model that were missing in the first stages of the process.

For the collection of the information used for the case study, there were several sources of information:

- The case study from IE Business School (Esteves and Domínguez, 2010)
- An interview with the BBVA Innovation Director, Ignacio Villoch Bayod. The summary of the complete interview can be found in annex IV.
- MIT CISR Research briefing on BBVA (Weill and Woerner, 2017).

In the next sections, first there will be a summary of the BBVA case and the crowdsourcing activities and then the analysis for validation of the model will be carried out.

These results of the thesis have been already the subject of partial publications in articles in scientific journals (see annex II).

6.2. BBVA crowdsourcing activities

Companies in the banking and finance industry are experimenting a process of digital transformation. And these changes are happening in the relationship model with the customers, the different interaction channels, the platforms, the organization and the human capital. The origin of these changes is the continuous ongoing technical innovation, which brings financial digital services and products to the markets and customers that embrace them more and more and with ease.

According to the report of the digital transformation of the Spanish bank industry in 2015 (Garcia de la Cruz, 2015), the sharing economy is democratizing everything that finds in its path. The rules of the game are changing and the new competitors in the industry are the large technological companies of Internet, which exploit the massive amount of information, and the fintech (finance and technology) startups, that come up with the new digital business models centered in the financial industry. This scenario had already been faced in other industries and it required the implementation of tools, techniques and business models based on the web 2.0 environment as it is the case of crowdsourcing.

One case within that industry that provides examples of the activities of a bank in this new environment is the case of the BBVA. Being the second largest bank in Spain, BBVA has proved to be an innovative player who has entered into this

process of technological update and has implemented different tools and initiatives from both the web 2.0 environment and the crowdsourcing approach.

Next it will be presented a review of the activities that BBVA has implemented in which they have involved the participation of the crowd.

6.2.1. Open Talent

This was the first crowdsourcing initiative implemented by BBVA and it was the most impactful one of them. It started in the year 2008 with the goal of finding solutions for BBVA through the involvement of the crowd. Open Talent could be defined as a competition for startups, SME's and large companies, for the generation of ideas to provide finance-related solutions that change the standard concept of the bank. At the end it should help the transformation of the company into something that represents better the more global and actual world. The experiences that could be collected after the first eight seasons of the competition should help in the identification of several data that test the model proposed and eventually validate it.

In the evolution of the Open Talent contest, BBVA identified several gaps in the relationship with the crowd, which led them to take different decisions to cover those gaps and improve the results of the initiative:

- Subjectivity found in the decision process by the crowd
- The crowd is more diverse when the area of activity expands
- Different rewards for different participants

- Usefulness of the crowd collaboration

The possibility of subjectivity in the democratization of decisions

The first significant experience lived by BBVA in their relationship with the crowd came in the first edition of the contest. The result of this first competition was that the winning team had presented a proposal that did not bring the best approach in the long term, as the bank needed. More specifically, the goals of the contest were achieved by this project through the generation of viral contents, which were valid only on a short-term basis.

The bank had found itself in a two-way approach that crowdsourcing brings, which provided not to be efficient for the Open Talent project goals. BBVA found out that the way the had implemented crowdsourcing not only meant that they turned to the crowd to outsource finding the solution to a problem or need. It also meant that the crowd participated as well in the evaluation of the proposals and the final decision.

As a consequence of this experience a change was implemented in the contest for the next editions, limiting the participation of the crowd for parts of the process when it lacks the specific knowledge needed for a good selection and evaluation of proposals. Currently the final voting is made among a pool of BBVA employees.

The expansion of the crowd and the contest to other areas

The contest had obtained a great success in Spain, such that BBVA decided to expand it to other areas of influence of the bank. One of those areas was Latin America where the contest enjoyed big success also.

This success meant that the amount of project proposals received was very large, and due to the limited resources of the organization it was identified that some filter for participants needed to be implemented.

Therefore a requirement was introduced only to admit project proposals that could be implemented globally. That was the experience of a project presented in Uruguay that could not be implemented in Spain due to the local regulations.

Additionally, this measure allowed a reduction in costs of the analysis of the proposals and the opportunity costs for projects that could not bring value to the bank since they could not be implemented.

The real value of the prize or reward

One of the key learnings for BBVA with the crowdsourcing experience is regarding the prize or reward that the project offers. Depending on the nature of the participants they aim at a different objective, and if the contest focuses on an economic prize or reward the process might be biased.

The contest was open to different populations: startups, SME's or larger firms, and the rewards could be different. It could be a monetary one, but it could also be a reward that entails some reputation or credibility or it could be a prize that provides some support in the startup process with acceleration or developments for their projects. An example of what BBVA can offer of a reputational reward would

be the incentive of having a meeting with the BBVA CEO. And for startups, the possibility of having access to some technological capabilities, rather than only monetary ones, could be also more rewarding.

Implementation of mature proposals

One last issue within the evolution of BBVA experience with crowdsourcing initiatives through the Open Talent contest was the path towards more mature proposals. At the beginning the challenge was open to any type of projects and many of them were projects that even if interesting, they were at the very early stages of their development. Through the succession of editions the program focused more on projects sufficiently evolved, since it allowed them to have a much shorter implementation time. This shorter time had an influence in the value creation process of the BBVA and the Open Talent crowdsourcing initiative.

6.2.2. Innova Challenge

This crowdsourcing initiative was similar to Open Talent but targeting a more specific population, as it was the case of students from universities and high schools. It was launched after the experience with Open Talent. The objective of its launching was to open an opportunity for the proposal and development of projects in the early stages from the participants.

The Innova Challenge platform also included a rewarding system, but adapted to the participants and their needs. The incentive offered, rather than being

a monetary one, it was a technological product of more use for the participants. One other different with the Open Talent contest was the goal of the crowdsourcing initiative of the Innova Challenge. The objective was to find talent through the ideas proposed in the process, but not necessarily to take them to implementation.

6.2.3. Beta Testers

This experience represents the third example of the use of the crowd for the BBVA initiatives. It consists in the existence of a community, in this case the crowd, of internal employees who participate in testing of the proposals of software presented, mainly for software debugging. In this case the crowd is internal to the organization and does not get any reward or compensation for it, as the case of Wikipedia platform.

6.2.4. Future activities of BBVA

The next stage in the banking industry is again being influenced by the technological changes. These changes are bringing into the scene players from other industries, as it is the case of the big players in the apps industry at world level, such as Google and Apple.

Also BBVA has started to target that area through a crowdsourcing initiative. They have launched the project Open 4 You, consisting on a platform based on an API sandbox that targets developers and digital entrepreneurs. In this new project

the crowd is composed of those developers willing to work on the development of proposals for potential financial services of BBVA, through the APIs delivered by the bank.

6.3. Analysis of the gaps and validation of the model

6.3.1. Covering the gaps with missing elements from the model

When analyzing the evolution of the BBVA initiatives with the existence of the detailed model, with the three organizational levels and elements, it is identified that it all starts from an initial design of the process of the Open Talent contest with the basic components of framework model. As the contest evolves and starts introducing changes, it can be seen that they are dealing with elements that had been included in the detailed model.

The first change implemented was the limitation of the participants, by leaving out of the contest those without the specific knowledge needed to make an adequate decision. This change wanted to cover a gap in the element of the model of the *crowd* (dimensions: supplier capabilities, pre-selection of contributors) at the micro level and *existing problem* to be solved by the crowd (dimension: what users can do), at the meso level.

The second change identified was the need to ensure that the participating projects could be implemented globally. In this case it dealt with a gap in the element

of the *activity proposed* (dimensions: Aggregation of contributions, goal that tries to achieve), also at the meso level.

The third change analyzed in the Open Talent initiative was regarding the rewards offered, which could affect the motivation. This aspect is covered in the article of Boudreau that analyzes the use of the crowd as a partner for the innovation of companies. In the detailed model the impact is more at the micro level, in the elements of *rewards* (dimensions: Nature of payment and rewards and incentives structures) and *motivational approach* (dimensions: Motivation and forms of motivation).

The last change implemented in Open Talent came after the contest was already established with the objective of ensuring that it reached relevant results. In this case it addressed the gap that existed at the macro level, in the element of *legitimacy* (dimensions: Value creation and value capture).

In the same direction of some of the prior changes introduced, the next BBVA modification came with the launching of the Innova Challenge. This new project directed to students covered again the gap in the element of the micro level of the *crowd* (dimension: pre-selection of contributors). And its design of the rewarding mechanism again addressed one of the gaps previously identified, this time at the micro level, in the elements of *rewards* (dimensions: Nature of payment and rewards and incentives structures) and *motivational approach* (dimensions: Motivation and forms of motivation).

The effect in the management of crowdsourcing initiatives that represents the introduction of the Beta Testers, the third initiative of BBVA, is in the same line

as some of the previous changes, impacting the organization at the micro level in the elements of the *crowd* (dimension: pre-selection of contributors) and the *motivational approach* (dimension: motivation).

6.3.2. Global analysis of the BBVA case

One of the main conclusions from the analysis of the BBVA case, with regards to their crowdsourcing initiatives, are the competitive advantages that an organization can draw from involving the crowd in part of their processes. But the main learning point is that for it to be successful it has to address issues at the micro, meso and macro levels. This means that they need to consider tools and elements at the individual level and the identification of opportunities. Likewise at the level of the organization, which includes its design and the mechanisms that govern it. And finally, also consider some elements at the institutional level when dealing with the legitimacy of the initiatives and the organizations.

Reviewing the specific actions taken, it could be observed the appearance of the reward element in the initiatives analyzed. This confirms its relevance in the model and therefore in the design of the crowdsourcing initiatives, with a significant role in the involvement of the crowd and participants.

Also, the three experiences of BBVA highlighted for them the importance of the selection of the crowd, which impacts organizations at the meso level, through the element of *the crowd* (dimensions: Nature of crowd, pre-selection of contributors). In the three cases addressing these dimensions in the design of their

initiatives allowed them to achieve a greater efficiency in their crowdsourcing projects through a lower time for analysis of proposals and higher guarantee of their applicability and success, and of reaching their goals in their innovation process.

When going beyond the individual changes in the initiatives and identifying which dimensions are modified in each case, a look can be taken at the complete model, including dimensions from the different authors, to see what elements of our organizational levels can be use to characterize them and differentiate each one from the others.

The actions of BBVA take place mostly at the micro level, in the analysis of the process, and there the following dimensions can be identified:

Crowd/participants:

- Crowd capital perspective (Prpić et al., 2015)
- Nature of the crowd (Corney et al., 2009)
- Pre-selection of contributors (Geiger et al., 2011)

Motivational approach:

- Degree of involvement of external labour (Ford et al., 2015)
- Engagement of solver (Garcia Martinez, 2015)

Crowd participation mode:

- Openness of project participation (Franzoni and Sauermann, 2014)

Inputs/Outputs:

- Disclosure of intermediate outputs (Franzoni and Sauermann, 2014)

Rewards and payments:

- Rewards and incentives structures (Marjanovic et al., 2012)

In the analysis at the organization level, the following dimensions could serve to classify the different initiatives:

Existing problem:

- Type of problem to be solved (Surowiecki, 2004)

For the institutional level, the dimensions would be:

Legitimacy:

- Value Creation and Value Capture (Kohler, 2015)

Governance process:

- Process governance (Zwass, 2010)

As a final conclusion from this case, the detailed model offers a framework for organizations to consider elements where there could be an impact in the organizations. Within these elements it can be found the dimensions that the different models and taxonomies propose for the analysis of crowdsourcing initiatives.

7. Expert quantitative validation

In the previous chapter it has been shown the validity of the approach proposed by the model in its application to a real case, as the initiatives of crowdsourcing of a big player in the bank industry.

Compared to the in depth analysis of one single case, a second mode of validation is the one proposed in this chapter, which in this case it is a qualitative one based on the answers of multiple participants in a survey. Another distinctive feature that this validation mode has is its more general approach, as it looks for validation of the approach that the models presented in this thesis propose. The initial framework model, the intermediate model (Palacios et al., 2016) and the detailed model, they all provide an approach to the analysis of crowdsourcing initiatives and the impact they have on organizations based on the three organizational levels and elements within each level.

The objective of the survey was to look for the validation of the model proposed in that approach and its usefulness, both of the model and of the elements defined at each level.

The moment of the launching of the survey was at an intermediate step in the research process, and it was included in one of the research outputs presented at an international conference and sent to a peer-reviewed article. Given this it was based on the intermediate model (Palacios et al., 2016). With this timing it provided to be a tool to ensure that the approach proposed had a sense in the community of

researchers and participants in order to continue with the detailed model. The survey was launched and kept open over the period of one month.

7.1. Description and design of the survey

The survey looked for the validation within the community of academics and practitioners linked with crowdsourcing and also with open innovation, as an area related to the first one. Therefore the survey was distributed on one side to academics involved in research projects or with publications in the area of crowdsourcing, identified through publications or networks of scientific members, as Research Gate. On the other side it was distributed among participants in an executive MBA program who were taking courses on open innovation, which served to target practitioners with an interest and knowledge on that area. The questionnaire was created with the Survey Monkey platform and the methods used for its distribution were on one side e-mails sent to academics and participants in the open innovation courses, and on the other to post the survey on the linked in of the authors.

The questioning in the survey was structured in four blocks, moving from questions of a general type to more and more specific ones, in a funnel-questioning mode.

The first stage looked for confirmation of the appropriateness and suitability of the participants. So besides the identification of the area they belonged to (academic, practitioner or both), this initial part tried to identify how close were the

participants to crowdsourcing activities and what was their awareness and knowledge of this area. For the detailed analysis it also allowed dividing the population of respondents.

The second block of questions of the survey tried to validate the approach proposed in the model for the analysis of the impact on organizations at the three levels established: micro, meso and macro. It was done firstly by inquiring about the recognition of the existence of an impact on organizations, and after that about the validity of dividing that impact among the three organizational levels.

Once this general approach was confirmed, the objective of the third stage was to review the proposal of dividing these levels in elements of the crowdsourcing process, and their validity for a further analysis of these activities.

The final block of questions on the association that the models tries to establish between the elements just identified for the organizational levels and the dimensions that each crowdsourcing model identifies for the evaluation and classification of the crowdsourcing activities (process, type of task, reward, etc.). Therefore the last step inquired the participants on the survey for the suitability of associating both concepts of elements and dimensions as a way to evaluate the impact.

7.2. General results of the survey

A first analysis of the results will be made at a global level, leaving for a second step the analysis by groups based on the profiles of the participants.

7.2.1. Profile of respondents

After the period of one month that the survey was open, it provided 41 positive responses, distributed among academics (32.5%), practitioners (50%) and those having both profiles (17.5%). One additional participant did not categorize itself in any of these categories.

In these first questions, besides the identification of the area they belonged to (academic, practitioner or both), there was the objective of determining how close the participants were to crowdsourcing activities and also their understanding and knowledge about this area. For the first question, more than two thirds (68.3%) categorized themselves as experts or with high or medium knowledge of crowdsourcing. For the second part of this block the large majority of respondents (95.1%) identified the existence of crowdsourcing initiatives in the current world, either as a new paradigm (17%), as an area of high level of activity (56%) or as medium level of activity (22%).

These results indicate a relevant knowledge among the participants in the survey, such that their responses can be valuable for the validation of the approach proposed in the framework and detailed models.

7.2.2. Validity of the approach provided by the model

With the questions included in this second part of the survey it was tried to determine the suitability of the approach proposed within the model for the analysis of the impact at the three levels included: micro, meso and macro.

So in the first question of this area, inquiring about the confirmation of the existence of an impact, a significant part (90.2%) recognized an impact of crowdsourcing on organizations, either fully (70.7%) or under certain conditions (19.5%), while only 9.8% identified none. In the second one, when asked about the model and its validity for the analysis of impact on crowdsourcing initiatives, the respondents identified the impact on the organization on an average of 78.9%, with a high significance at the micro (87.8%) and meso (87.8%) levels and a lower relevance at the macro level (61.0%), although still significant.

7.2.3. Elements of organizational levels

As indicated, the third group of questions was meant to review the proposed elements in which the levels are divided for crowdsourcing initiatives, and their validity for a further study of these type of activities. The collected answers identified that the two elements belonging to the micro level as well as the two belonging to the meso level had a recognition of significance of 78.1% or higher, while those who answered that it had little or no relevance were 10% at most. In the macro level the results identified the *Legitimacy* as the most relevant element, with an acceptance of 73.7%. For the rest elements the values ranged from 67.5% to 56.1%.

7.2.4. Linking elements and dimensions

In the final step the questions reviewed the usefulness of associating elements of organizational levels and dimensions included in the crowdsourcing models for the classification and characterization of these activities. This is the objective of the model proposed of the model in the thesis and the research associated. The responses to this question showed a high level of approval (80.5%), while 9.8% had further comments or questions, and a similar percentage (9.8%) did not support it.

7.3. Analysis of results per profiles of respondents

This section will now cover the results by profiles of participants, as they can be classified in *academic* profile (academics or those who identified themselves as both academic and practitioners) and *practitioner* profile (practitioners and those who identified themselves as both academic and practitioners). There were 20 respondents in the first group and 28 in the second one.

7.3.1. Profile of respondents

Both groups of respondents had over 70% of them classified as experts or with high or medium knowledge of crowdsourcing, so no differences among them. A small difference existed in the relevance given to crowdsourcing as all participants in the academics group identified the presence of crowdsourcing initiatives in the

current world, while it was only 93% of the practitioner population. The conclusive value of the first group can indicate the support of this business process approach among the academic side.

7.3.2. Validity of the approach provided by the model

As a continuation of the trend identified in the prior set of questions, all academics acknowledged the validity of the model for the analysis of the impact of crowdsourcing on organizations. The relevance was higher at the micro (95%) and meso (90%) levels than at the macro level (70%).

The result for the practitioners was still a high one, as it reached 85.8%, with the micro and meso levels being considered relevant at 82.1% both, compared also to the macro that reached the 60.1% level.

7.3.3. Elements of organizational levels

It is interesting to highlight how the practitioner population identifies a higher relevance for most of the elements indicated in the model for the three levels, than the academics. This had been the opposite at the more global level.

All macro level elements (*Legitimacy, Code of Conduct, etc.*) moved between the 64.2% and 82% range of significance for them, compared to the values between 55% and 65% reached among academics.

The same trend is found at the meso levels (values 85% for practitioners and 80% for academics) and only at the *Engagement mechanism* the academics identify a higher relevance, although very similar one, for one of the elements (80% versus 78.5%).

7.3.4. Linking elements and dimensions

Also in this part of the analysis of the results, there is a higher approval of the approach among practitioners, with a support close to 90%, compared to academics (70%). This shows a slightly different vision on the important parts of the model between both groups.

7. 4. Conclusions

In summary the results show a big acceptance among the participants of the approach proposed through the models for analysis of crowdsourcing activities. The division on three levels (micro, meso and macro) is validated, with bigger support for the micro and meso levels and elements, as well as the *Legitimacy* element for the macro level. Same result is achieved for the association that the models establish between the dimensions of the crowdsourcing models of the literature with the organizational levels and elements.

These results are also in line with the existing academic literature, as the acceptance is higher for the micro and meso levels, where the different

crowdsourcing models identify many more dimensions of analysis. The macro level is the one at which the models identify less dimensions, and it is the one with lower values of acceptance.

And when the analysis process looks deeper, it is at the more detailed levels where there is a higher recognition for the model and that happens more among the participants than the academics, which show higher values at the more general questions over the approach proposed in the thesis.

Within the questions that inquired about additional elements to divide the three levels into, there was the proposal of including more technical categories, as it would be “coding and input integration” at the meso level. The need to have some technical dimensions in the analysis is also identified in the results of the research included in chapter 5. Within that section it can be found some dimensions related with the platform and the interaction layer, as one element of the micro level.

8. Conclusions

Throughout the chapters of this thesis, it has been presented the growing importance of crowdsourcing as a new business process, as seen in the many examples available. At the academic level the amount of literature on this field produced in the last years has been numerous, with many authors providing the grounds for its explanation and definition.

The research and the analysis carried out have been able to introduce this field of the companies' activities and processes. It has also provided a broad overview of many models of crowdsourcing which has allowed to get a complete view of the process included, the players involved and the tasks carried out by each of them. Another area discussed has been the effect in organizations that this new business approach has provided and the needs that the new organizations surging in this field have, specially in the necessity to achieve a legitimacy for their actions and these type of activities.

Once both areas have been introduced, the work has centered on the development of the model that established a relationship among them. This was the main objective of the thesis.

8.1. Main conclusions

The main objective had been divided in some secondary ones that addressed specific questions, as a way to achieve the final result. Achieving these intermediate

goals were the results included in chapters 4 and 5, as well as the validation completed in chapters 6 and 7.

The two chapters dedicated to the development of the framework model and the detailed model have produced the following results:

Identification of crowdsourcing models and dimensions

The review of the literature on crowdsourcing produced a significant number of models and taxonomies, each one of them providing some characteristics of those initiatives that allowed their classification or categorization. Those characteristics were defined as dimensions for the model presented in the thesis.

The analysis of those dimensions finalized with different sets of them, grouped by similarities in the part of the crowdsourcing process that they address. For each group different authors were found to identify dimensions, which in several cases were similar but also complementary. Eventually these groups would be the potential elements of the organizational levels that made the initial framework model and the detailed one.

The conclusion that could be drawn from those results was the existence of different components of the crowdsourcing processes, which represented areas of analysis of the organizations involved that allowed the development of the framework model that provided three level of analysis: micro or individual, meso or organizational and macro or societal levels.

Additionally, these groups of dimensions provided an introduction to the impact these processes had in existing or new organizations and were the basis for the models presented in this document.

Identification of organizational levels and elements

While chapter 4 introduced an initial framework model that presented the three organizational levels: micro, meso and macro, the deep review and analysis displayed in chapter 5 allowed the development of the detailed model.

The earlier identification and the grouping of the dimensions established groups of characteristics that could be used to define the elements of each organizational level.

The main conclusion from this part, when achieving this intermediate objective was the confirmation of the framework that represented this new approach for the analysis of crowdsourcing initiatives. This approach is based on relationship of the dimensions and the elements of the organizational levels, as indicated in the detailed model.

Validation of the model

This was the third intermediate objective and it came after chapter 4 and 5 had provided a detailed model. Within the research process the next steps would be to validate the model proposed, both at the general approach provided and at the specific approach of the components of the model.

Chapters 6 and 7 looked for the confirmation of the model proposed, through the study of the case of a relevant player in the banking industry and its crowdsourcing initiatives and the elaboration and distribution of a survey among

scholars and practitioners. This two processes of validation gave both a qualitative validation (case study) and a quantitative one (survey).

The main conclusion that can be drawn from this part, is the confirmation that the model fits within the activities of an important player in the innovation of the banking industry, as well as it fits with the view and experience that scholars and practitioners have on this field. The approach provided by the model along with the levels and elements identified at that stage were considered relevant, and the possibilities suggested by some survey responses also came out in the analysis of the results.

8.2. Final conclusion

The current research has achieved the following main goals:

- Identification and selection of dimensions from crowdsourcing models and taxonomies
- Identification of three organizational levels and of elements within them, for the analysis of the impact on organizations
- Development of an initial framework model of crowdsourcing processes and organizational levels
- Development of a detailed model that links the dimensions of crowdsourcing models and the elements of the organizational levels
- Validate the approach proposed by the model developed for the analysis of crowdsourcing initiatives

- Validate the approach proposed by the model through the recognition of members of the research community.

Through the results and conclusions discussed in this and the previous section, it can be determined that the main objective of the thesis has been satisfactorily completed, of developing a model for the review of the impact that crowdsourcing initiatives have on organizations.

9. References

- Adams, S. A. (2011). Sourcing the crowd for health services improvement: The reflexive patient and “share-your-experience” websites. *Social Science & Medicine*, 72(7), 1069-1076.
- Afuah, A., and Tucci, C. L. (2012). Crowdsourcing as a solution to distant search. *Academy of Management Review*, 37(3), 355-375.
- Albors, J., Ramos, J. C., & Hervasa, J. L. (2008). New learning network paradigms: Communities of objectives, crowdsourcing, wikis and open source. *International Journal of Information Management*, 28(3), 194-202.
- Baker, P. R., Francis, D. P., Hall, B. J., Doyle, J., & Armstrong, R. (2010). Managing the production of a Cochrane systematic review. *Journal of public health*, 32(3), 448-450.
- Bayus, B. L. (2013). Crowdsourcing new product ideas over time: An analysis of the Dell IdeaStorm community. *Management Science*, 59(1), 226-244.
- Belleflamme, P., Lambert, T., & Schwienbacher, A. (2014). Crowdfunding: Tapping the right crowd. *Journal of Business Venturing*, 29(5), 585-609.
- Bigham, J. P., Bernstein, M. S., & Adar, E. (2015). Human-Computer Interaction and Collective Intelligence. *Handbook of Collective Intelligence*, 57.
- Bonabeau, E. (2009). Decisions 2.0: The power of collective intelligence. *MIT Sloan Management Review*, 50(2).

- Boons, M., Stam, D., & Barkema, H. G. (2015). Feelings of Pride and Respect as Drivers of Ongoing Member Activity on Crowdsourcing Platforms. *Journal of Management Studies*, 52(6), 717-741.
- Booth, A., Sutton, A., & Papaioannou, D. (2016). *Systematic approaches to a successful literature review*. Sage.
- Bostman, R., Rogers, R., (2010) "What's Mine Is Yours: The Rise of Collaborative Consumption", Editorial Collins.
- Boudreau, K., & Lakhani, K. (2013). Using the crowd as an innovation partner. *Harvard Business Review*, 91(4).
- Brabham, D. (2008). Crowdsourcing as a Model for Problem Solving - An Introduction and Cases.
- Brabham, D. C. (2009). Crowdsourcing the public participation process for planning projects. *Planning Theory*, 8(3), 242-262.
- Brabham, D. C. (2010). Moving the crowd at threadless. *Information, Communication & Society*, 13(8), 1122-1145.
- Brabham, D. C. (2013). Crowdsourcing. *John Wiley & Sons, Inc.*
- Bruton, G., Khavul, S., Siegel, D., & Wright, M. (2015). New financial alternatives in seeding entrepreneurship: Microfinance, crowdfunding, and peer-to-peer innovations. *Entrepreneurship Theory and Practice*, 39(1), Special Issue, 9-26.
- Bugs, G., Granell, C., Fonts, O., Huerta, J., & Painho, M. (2010). An assessment of Public Participation GIS and Web 2.0 technologies in urban planning practice in Canela, Brazil. *Cities*, 27(3), 172-181.
- Carr, N. (2010). A typology of crowds.

- Chesbrough, H. (2006). Open innovation: a new paradigm for understanding industrial innovation, in: Chesbrough H, Vanhaverbeke W, West J , Open innovation: researching a new paradigm. Oxford University Press, Oxford, pp. 1–12.
- Chesbrough, H. W. (2003). Open innovation: The new imperative for creating and profiting from technology. Harvard Business Press.
- Child, J., & Rodrigues, S. B. (2003). Corporate governance and new organizational forms: Issues of double and multiple agency. *Journal of Management and Governance*, 7(4), 337–360.
- Corney, J. R., Torres-Sánchez, C., Jagadeesan, A. P., & Regli, W. C. (2009). Outsourcing labour to the cloud. *International Journal of Innovation and Sustainable Development*, 4(4), 294-313.
- Counsell, C. (1997). Formulating questions and locating primary studies for inclusion in systematic reviews. *Annals of internal medicine*, 127(5), 380-387.
- Chiu, C M, Liang, T P, and Turban, E. (2014). What can crowdsourcing do for decision support? *Decision Support Systems* 65, pp. 40-49.
- Dacin, M. T., Goodstein, J., & Scott, W. R. (2002). Institutional theory and institutional change: Introduction to the special research forum. *Academy of Management Journal* 45(1), 45–57.
- Daly, T. M., & Natarajan, R. (2015). Swapping bricks for clicks: Crowdsourcing longitudinal data on Amazon Turk. *Journal of Business Research*.
- Davey, N. (2010). Ross Dawson: Six tools to kickstart your crowdsourcing strategy. Mycustomer.com (<https://www.mycustomer.com/marketing/strategy/ross-dawson-six-tools-to-kickstart-your-crowdsourcing-strategy>)

- Doan, A., Ramakrishnan, R., & Halevy, A. Y. (2011). Crowdsourcing systems on the world-wide web. *Communications of the ACM*, 54(4), 86-96.
- Edgeman R, Engell T, Jensen N G, Vrtik1 M, Eskildsen J, Tambo, T. (2015) Structured Crowdsourcing: A B2B Innovation Roadmap. Paper presented at 10th European Conference on Innovation and Entrepreneurship, Genoa, Italy.
- Eisenhardt, K. M. (1989). Building theories from case study research. *Academy of management review*, 14(4), 532-550.
- Estellés-Arolas, E., & González-Ladrón-de-Guevara, F. (2012). Towards an integrated crowdsourcing definition. *Journal of Information Science*, 38(2), 189–200.
- Esteves, J. & Domínguez, M. (2010). El banco BBVA: La (re)-evolución innovadora de la web 2.0. *IE Business Publishing*.
- Fink, A. (2005). Conducting research literature reviews: *From the internet to paper*. Sage.
- Ford, R. C., Richard, B., & Ciuchta, M. P. (2015). Crowdsourcing: A new way of employing non-employees?. *Business Horizons*, 58(4), 377-388.
- Franzoni, C., & Sauermann, H. (2014). Crowd science: The organization of scientific research in open collaborative projects. *Research Policy*, 43(1), 1-20.
- García de la Cruz, R. (2015). Análisis del Nuevo Panorama Competitivo Digital de la Banca. *La transformación digital de la banca Española. Estudio Banca Digital España*, 47-54.
- Garcia Martinez, M. (2015). Solver engagement in knowledge sharing in crowdsourcing communities: Exploring the link to creativity. *Research Policy*, 44(8), 1419-1430.

- Geiger, D., Seedorf, S., Schulze, T., Nickerson, R. C., & Schader, M. (2011, August). Managing the Crowd: Towards a Taxonomy of Crowdsourcing Processes. In *AMCIS*.
- Georgi S, Jung R (2012). Collective Intelligence Model: How to Describe Collective Intelligence. https://doi.org/10.1007/978-3-642-25321-8_5.
- Greenwood, R., & Suddaby, R. (2006). Institutional entrepreneurship in mature fields: The Big Five accounting firms. *Academy of Management Journal*, 49(1), 27–48.
- Hammon, L., & Hippner, H. (2012). Crowdsourcing. *Business & Information Systems*
- Hilgers, D., & Ihl, C. (2010). Citizensourcing: Applying the concept of open innovation to the public sector. *International Journal of Public Participation*, 4(1).
- Hossain, M., & Kauranen, I. (2015). Crowdsourcing: a comprehensive literature review. *Strategic Outsourcing: An International Journal*, 8(1), 2-22.
- Hosseini, M., Phalp, K., Taylor, J., & Ali, R. (2014, May). The four pillars of crowdsourcing: A reference model. In *Research Challenges in Information Science (RCIS), 2014 IEEE Eighth International Conference on* (pp. 1-12). IEEE.
- Hosseini, M. (2014, February). Crowdsourcing Definitions and Its Features: An Academic Technical Report. RCIS 2014 conference. *Engineering*, 4(3), 163-166.
- Hosseini, M., Shahri, A., Phalp, K., Taylor, J., & Ali, R. (2015). Crowdsourcing: A taxonomy and systematic mapping study. *Computer Science Review*, 17, 43-69.
- Howe, J. (2006). The rise of crowdsourcing. *Wired magazine*, 14(6), 1-4.

- Howe, J. (2008). *Crowdsourcing: How the power of the crowd is driving the future of business*. Random House.
- Huizingh, E. K. (2011). Open innovation: State of the art and future perspectives. *Technovation*, 31(1), 2–9.
- Ibrahim, R. (2008). Setting up a research question for determining the research methodology. *ALAM CIPTA International Journal on Sustainable Tropical Design Research & Practice*, 3(1), 99-102.
- Jeppesen, L. B., & Lakhani, K. R. (2010). Marginality and problem solving effectiveness in broadcast search. *Organization Science*, 21, 1016–1033.
- Kazai, G., Kamps, J., & Milic-Frayling, N. (2011, October). Worker types and personality traits in crowdsourcing relevance labels. In *Proceedings of the 20th ACM international conference on Information and knowledge management* (pp. 1941-1944). ACM.
- Kidder, L. H. (1981). Qualitative research and quasi-experimental frameworks. *Scientific inquiry and the social sciences*, 226-256.
- Kittur, A., Chi, E. H., & Suh, B. (2008, April). Crowdsourcing user studies with Mechanical Turk. In *Proceedings of the SIGCHI conference on human factors in computing systems* (pp. 453-456). ACM.
- Kleeman, F., Voss, G.G., & Rieder, K. (2008). Un(der)paid Innovators: The commercial utilization of consumer work through crowdsourcing. *Science, Technology and Innovation Studies* 4(1), 5–26.
- Kohler, T. (2015). Crowdsourcing-Based Business Models. *California Management Review*, 57(4), 63-84.

- Kuppuswamy, V., & Bayus, B. L. (2013). Crowdfunding Creative Ideas: The Dynamics of Project Backers in Kickstarter. *UNC Kenan-Flagler Research Paper*.
- Lakhani, K.R., Lifshitz-Assaf, H., & Tushman, M. L., (2012). Open innovation and organizational boundaries: the impact of task decomposition and knowledge distribution on the locus of innovation. *HBS Working Paper* 12-057.
- Lambert, T., & Schwienbacher, A. (2010). An empirical analysis of crowdfunding. *Social Science Research Network*, 157-175.
- Lee, S-H, DeWester, D, Ra Park, S (2008). Web 2.0 and opportunities for small businesses. 2 (4) pp. 335-345.
- Lehner, O.M. (2013). Crowdfunding social ventures: a model and research agenda. *Venture Capital*, 15(4), 289-311.
- Leimeister J. M. (2010). Collective Intelligence. *Business & Information Systems Engineering*, 2 (4), pp. 245-248.
- Lessig, L. (2008). *Remix: Making art and commerce thrive in the hybrid economy*. New York.
- Levine, S., & Prietula, M. (2014). Open collaboration for innovation: Principles and performance. *Organization Science*, 25(5), 1414-1433.
- Lounsbury, M., & Glynn, M. A. (2001). Cultural entrepreneurship: Stories, legitimacy, and the acquisition of resources. *Strategic Management Journal*, 22(6-7), 545-564.
- Majchrzak, A., & Malhotra, A. (2013). Towards an information systems perspective and research agenda on crowdsourcing for innovation. *Journal of Strategic Information Systems*, 22(4), 257-268.

- Malone, T. W., Laubacher, R., & Dellarocas, C. (2010). The collective intelligence genome. *MIT Sloan Management Review*, 51(3), 21.
- Marjanovic, S., Fry, C., & Chataway, J. (2012). Crowdsourcing based business models: In search of evidence for innovation 2.0. *Science and Public Policy*, 39(3), 318–332.
- Martineau, E. (2012). *A typology of crowdsourcing participation styles* (Doctoral dissertation, Concordia University).
- Martínez-Corral A, Grijalvo M, Palacios M (2016). Crowdsourcing and Organizational Models: An Analysis of Dimensions for Impact in Organizations. Building bridges between researches and practitioners. ISBN: 978-84-8081-494-2.
- Martinez-Corral, A. , Palacios, M. , & Grijalvo, M. (2016). Modelos organizativos para iniciativas de crowdsourcing. *Economía industrial*, (402), 65-71.
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook*. Sage.
- Mladenow, A., Bauer, C., & Strauss, C. (2014). Social Crowd Integration in New Product Development: Crowdsourcing Communities Nourish the Open Innovation Paradigm. *Global Journal of Flexible Systems Management*, 15(1), 77–86.
- Mollick, E. (2014). The dynamics of crowdfunding: An exploratory study. *Journal of Business Venturing*, 29(1), 1–16.
- Murray, F., & O'Mahony, S. (2007). Exploring the foundations of cumulative innovation: implications for organization science. *Organization Science*, 18(6), 1006–1021.

- Muthukumaraswamy, K. (2010). When the media meet crowds of wisdom: How journalists are tapping into audience expertise and manpower for the processes of newsgathering. *Journalism practice*, 4(1), 48-65.
- Nakatsu, R. T., Grossman, E. B., & Iacovou, C. L. (2014). A taxonomy of crowdsourcing based on task complexity. *Journal of Information Science*, 40(6), 823-834.
- Olsen, T., & Carmel, E. (2013). The process of atomization of business tasks for crowdsourcing. *Strategic Outsourcing: An International Journal*, 6(3).
- Owyang, J., Tran, C., & Silva, C. (2013). The collaborative economy. *Altimeter, United States*.
- Palacios, M., Martinez-Corral, A., Nisar, A., & Grijalvo, M. (2016). Crowdsourcing and organizational forms: Emerging trends and research implications. *Journal of Business Research*, 69(5), 1834-1839.
- Pénin, J., & Burger-Helmchen, T. (2011). Crowdsourcing of inventive activities: definition and limits. *International Journal of Innovation and Sustainable Development*, 5(2-3).
- Piezunka, H., & Dahlander, L. (2015). Distant Search, Narrow Attention: How Crowding Alters Organizations' Filtering of User Suggestions. *Academy of Management Journal* 58(3), 856-880.
- Piller, F. T., Ihl, C., & Vossen, A. (2010). A typology of customer co-creation in the innovation process. Available at SSRN 1732127.
- Poetz, M. K., & Schreier, M. (2012). The value of crowdsourcing: Can users really compete with professionals in generating new product ideas? *Journal of Product Innovation Management*, 29(2), 245-256.

- Prpić, J., Shukla, P. P., Kietzmann, J. H., & McCarthy, I. P. (2015). How to work a crowd: Developing crowd capital through crowdsourcing. *Business Horizons*, 58(1), 77-85.
- Quinn, A. J., & Bederson, B. B. (2011, May). Human computation: a survey and taxonomy of a growing field. In *Proceedings of the SIGCHI conference on human factors in computing systems* (pp. 1403-1412). ACM.
- Rao, H., Morril, C., & Zald, M.N. (2000). Power Plays: How social movements and collective action create new organizational forms. *Research in Organizational Behavior*, 22, 237–281.
- Rouse, A. C. (2010). A preliminary taxonomy of crowdsourcing. *ACIS 2010 Proceedings*, 76, 1-10.
- Rousseau, D., Sitkin, S., Burt, R., & Camerer, C. (1998). Not so different after all: A cross-discipline view of trust. *Academy of Management Review* 23(3), 393–404.
- Saxton, G. D., Oh, O., & Kishore, R. (2013). Rules of crowdsourcing: Models, issues, and systems of control. *Information Systems Management*, 30(1), 2-20.
- Schenk, E. & Guittard, C. (2011). Towards a characterization of crowdsourcing practices. *Journal of Innovation Economics & Management*, 7(1), 93–107
- Schlagwein, D., & Bjørn-Andersen, N. (2014). Organizational Learning with Crowdsourcing: The Revelatory Case of LEGO. *Journal of the Association for Information Systems*, 15(11), 754–778.
- Scott, W. R., Ruef, M., Mendel, P. J., & Caronna, C. A. (2000). *Institutional change and healthcare organizations: From professional dominance to managed care*. Chicago: University of Chicago Press.

- Skopik, F., Schall, D., & Dustdar, S. (2010). Modeling and mining of dynamic trust in complex service-oriented systems. *Information Systems*, 35(7), 735-757.
- Suddaby, R., Elsbach, K.D., Greenwood, R., Meyer, J. W., & Zilber, T.B. (2007). Organizations and their institutional environments—Bringing meaning, values, and culture back in: Introduction to the special research forum. *Academy of Management Journal*, 50, 468-469.
- Surowiecki, J. (2004). The wisdom of crowds: Why the many are smarter than the few and how collective wisdom shapes business, economies, societies, and nations. New York: *Doubleday*.
- Tracey, P., Phillips, N., & Jarvis, O. (2011). Bridging institutional entrepreneurship and the creation of new organizational forms: A multilevel model. *Organization Science* 22(1), 60-80.
- Turner, A. M., Kirchhoff, K., & Capurro, D. (2012). Using crowdsourcing technology for testing multilingual public health promotion materials. *Journal of medical Internet research*, 14(3).
- Vuković, M. (2009, July). Crowdsourcing for enterprises. In Services-I, 2009 World Conference on (pp. 686-692). IEEE.
- Vukovic, M., & Bartolini, C. (2010). Towards a research agenda for enterprise crowdsourcing. Leveraging applications of formal methods, verification, and validation. *Lecture Notes in Computer Science*, 6415, 425-434.
- Weill, P., & Woerner, S. L. (2017). Is Your Company a Digital Leader or a Digital Laggard?. *MIT CISR*

- Wiggins, A., & Crowston, K. (2011, January). From conservation to crowdsourcing: A typology of citizen science. In *System Sciences (HICSS), 2011 44th Hawaii international conference on* (pp. 1-10). IEEE.
- Xu, B., Zheng, H., Xu, Y., & Wang, T. (2015). Configurational paths to sponsor satisfaction in crowdfunding. *Journal of Business Research*.
- Ye, H. J., & Kankanhalli, A. (2015). Investigating the antecedents of organizational task crowdsourcing. *Information & Management*, 52(1), 98-110
- Yin, R. K. (1984). Case Study Research: Design and Methods. *Applied Social Research Methods, Vol. 5*. Fifth edition. Sage Publications.
- Zhao, Y.C., & Zhu, Q. (2014). Evaluation on crowdsourcing research: Current status and future direction. *Information Systems Frontiers*, 16(3), 417-434.
- Zhao, Y. C., & Zhu, Q. (2014). Effects of extrinsic and intrinsic motivation on participation in crowdsourcing contest: A perspective of self-determination theory. *Online Information Review*, 38(7), 896–917.
- Zheng, H., Li, D., & Hou, W. (2011). Task design, motivation, and participation in crowdsourcing contests. *International Journal of Electronic Commerce*, 15(4), 57–88.
- Zimmerman, M. A., & Zeitz, G. J. (2002). Beyond survival: Achieving new venture growth by building legitimacy. *Academy of Management Review*, 27(3), 414–431.
- Zott, C., & Huy, Q. N. (2007). How entrepreneurs use symbolic management to acquire resources. *Administrative Science Quarterly* 52(1), 70–105.
- Zwass, V. (2010). Co-creation: Toward a taxonomy and an integrated research perspective. *International Journal of Electronic Commerce*, 15(1), 11-48.

10. Annexes

Annex I – Article

Palacios, M., Martinez-Corral, A., Nisar, A., & Grijalvo, M. (2016). Crowdsourcing and organizational forms: Emerging trends and research implications. *Journal of Business Research*, 69(5), 1834-1839.

DOI: <http://dx.doi.org/10.1016/j.jbusres.2015.10.065>

Ed: Elsevier. ISSN 0148-2963.

Annex II – Article

Martinez-Corral, A. , Palacios, M. , & Grijalvo, M. (2016). Modelos organizativos para iniciativas de crowdsourcing. *Economía industrial*, (402), 65-71.

ISSN: 0422-2784

Annex III – Interview to BBVA Innovation Manager

Entrevista BBVA – Ignacio Villoch

(Entrevista realizada por Alberto Martínez Corral y Héctor Castillo el 5 de Julio de 2016 en el BBVA Innovation Center en Madrid. Transcripción y resumen realizados por Héctor Castillo)

Ignacio empezó comentando sobre UNO-E siendo el programa pionero en la parte de innovación del BBVA. Aunque este no destaque en el ámbito del crowdsourcing, sí que lo hace en el de fintech, específicamente, uno-e cabe dentro de la definición de direct bank, siendo una plataforma que ofrece servicios financieros remotamente (on-line, teléfono, cajeros/ATM). Cabe mencionar, que actualmente la plataforma posee simuladores de inversión, cuentas, hipotecas, entre otros.

Asimismo, también comentó sobre el programa “tú cuentas”, plataforma que se utilizó como medio para ofrecer servicios financieros a clientes del BBVA. Esta herramienta fue desarrollada para aportar información al cliente no sólo respecto a sus cuentas con el BBVA sino también aportando información relevante sobre otros usuarios con las mismas características financieras y la posibilidad de poder incluir cuentas de otros bancos. De esta forma, a través de un análisis algorítmico o de IA, la plataforma daba sugerencias sobre las mejores decisiones que el cliente podía considerar.

Es importante resaltar que la plataforma cerró debido a diferentes razones. Ignacio expuso que la principal fuente del cese del servicio fue que “no era su momento”, la ideología y privacidad que se tenía a través de la web en el 2008 no es la de ahora. Además, hizo hincapié en que Facebook a penas salía a relucir en el 2006 y que la idea de compartir información personal en la web era delicada. Por otro lado, los bancos también vieron a esta plataforma como una amenaza ante la ventaja que tendría el BBVA al tener la información de su competencia en la plataforma.

Subsecuentemente, Ignacio destacó que el proceso de innovación del BBVA proviene desde el 2006, utilizando procesos de innovación abierta como el de Chesbrough. Además, subrayó que este proceso de innovación coincidió con el crecimiento de las redes sociales (Facebook 2006) y ayudó a incrementar los canales de opiniones e información. Asimismo, en el 2007, BBVA presenta un stand en la feria del equipamiento electrónico, informático y de telecomunicaciones en SIMO (Salón Informativo de Material de Oficina), donde ese año se hizo énfasis en el auge de la web 2.0.

Dentro del tema de crowdsourcing, Ignacio enfatizó tres hechos de importancia dentro del desarrollo de innovación del BBVA.

- El primero y sin duda alguna el de mayor impacto es OPEN TALENT, programa implantado en el 2008 con el objetivo de encontrar soluciones a través del crowd. Se define como una competición donde startups, PYMES y grandes empresas compiten para generar soluciones a nivel financiero,

transformando el concepto de banca en algo más global y actual. Tras ocho (8) ediciones del concurso, Ignacio resaltó varios hechos que permiten comprobar varias de las hipótesis encontradas en los papers que hemos analizado.

- **La expansión del crowd a otras localidades.** Tras el éxito de haber implantado la competición en España, se decidió expandir el concurso internacionalmente. Específicamente, Ignacio expuso del buen feedback que se tuvo en América, sin embargo, dada la gran participación y la poca capacidad de absorber tantos proyectos, se decidió hacer un proceso de filtración. Este proceso permitió depurar propuestas que no podían ser desarrolladas globalmente. Un ejemplo que expuso Ignacio fue el del caso de Uruguay, donde se propuso un proyecto de validación de documentos que no era viable de implantar en España por las leyes del país.
 - De esta forma observamos que es necesario un proceso de filtración y selección de los usuarios de la comunidad de usuarios/crowd. Asimismo, se garantizaría una reducción en costes incididos en horas hombre de análisis y costes de oportunidad referentes a otros proyectos que sean de valor para el banco.
- **La subjetividad en la democratización de las decisiones.** Ignacio recordó que en la primera edición ganó un grupo cuyo proyecto no tenía la mejor aproximación al largo plazo, específicamente, el proyecto conseguía los objetivos generando contenidos virales. Esto implicó un cambio en las futuras ediciones, donde las votaciones finales son realizadas por un grupo de empleados de BBVA.
 - Cabe destacar que la primera edición tuvo un proceso de crowdsourcing en ambas direcciones, no sólo se buscaba la solución del problema a través de la externalización a la sociedad/crowd, sino que la comunidad también valoraba y decidía. Pero hemos de observar que quizás se pierde objetividad en el proceso cuando el crowd carece de los conocimientos específicos para poder hacer una buena elección.
- **El valor real del premio o reward.** Esta acotación fue sin duda una de las más importantes, ya que se expone cuan atractivo tiene que ser el premio. Ignacio explicó que el valor del premio no debe depender solamente de la segmentación de los usuarios en la competición, bien sean startups, PYMES o grandes empresas. Esto se debe, a que cada una va en busca de un objetivo distinto y que muchas veces se ve sesgada la orientación, idea o meta del proyecto por la obtención de una ganancia monetaria. Asimismo, Ignacio describe varios tipos de premios que el BBVA ha asignado a lo largo de sus ediciones. Cabe destacar que estos hechos se asemejan a los descritos en el paper de Kevin J. Boudreau, "Using the Crowd as an Innovation Partner"

- **Premio monetario.**
 - **Premio que genera prestigio.** Un ejemplo que comentó Ignacio fue que puede ser un mayor incentivo y generar un mayor valor, la oportunidad de reunirse con el CEO del BBVA.
 - **Premio de ayuda, aceleración y desarrollo.** Ignacio comentó que muchas startups están mayormente motivadas en aumentar sus capacidades técnicas en vez de las económicas (aunque lo económico siempre ha sido una motivación esencial).
- **La adopción de propuestas maduras.** Ignacio recalcó que uno de los procesos evolutivos dentro de las ediciones fue el apostar por “proyectos no verdes”, ya que esto permite tener propuestas de valor desarrolladas y que su tiempo de implementación sea mucho más corto.

Por otro lado, se habló de INNOVA CHALLENGE. Es una plataforma con base similar a la de OPEN TALENT, pero el target se centra en los estudiantes de universidades e institutos, básicamente, consiste en otorgar la oportunidad de desarrollar y exponer ideas o “proyectos verdes” a estudiantes.

Al igual que OPEN TALENT, innova challenge tiene un sistema de compensación, pero este se diferencia en que los premios no suelen ser monetarios, sino que más bien son adaptados a las necesidades de los participantes. Ignacio comentó que por lo general los participantes de innova challenge tienen un mayor incentivo si el premio es un producto tecnológico que puede ser usado, en vez una aportación monetaria que por lo general no genera el mismo interés. Adicionalmente, Innova challenge no resulta ser un método o proceso de crowdsourcing ya que las ideas generadas no se llevan a la realidad. En contraste, Ignacio comentó que este evento permite encontrar talento.

Esta última acotación confirma lo expuesto en OPEN TALENT, el incentivo del reward en el crowd es un hecho más de estudio al momento de proponer un concurso, ya que lo convierte en un actor principal a la hora de reclutar a los usuarios o participantes de la comunidad. Asimismo, la selección del crowd es un hecho que cobra gran importancia, ya que una correcta comunidad de usuarios implica un menor tiempo de análisis, una eficiencia en las propuestas presentadas y en consecuencia una reducción en los costes generales del proceso de innovación.

El tercer hecho fue la utilización de Beta testers para la examinación de las propuestas presentadas. En general, Ignacio expuso este proceso como un crowdsourcing interno de la empresa, parecido al de Wikipedia, ya que existe una comunidad de empleados que realizan comprobaciones (por lo general depuración de código) de las propuestas presentadas. Asimismo, estos testers no reciben ninguna recompensa o reward por el trabajo realizado. Cabe destacar, en mi opinión, debe de existir algún tipo de retribución, estímulo o distinción.

Finalmente, Ignacio habló sobre la nueva plataforma que saldrá en Septiembre: “BBVA OPEN 4 YOU”, la cual se basa en una API sandbox o API market y está destinada a developers o emprendedores digitales. Esencialmente, se basa en un proyecto de crowdsourcing donde el crowd son todos aquellos developers dispuestos a desarrollar servicios financieros a través de las APIs proporcionadas por BBVA. Básicamente, se trata de un proyecto de simulación donde los developers tienen que desarrollar servicios o programas que puedan ser utilizados e integrados a la plataforma del banco. Además, BBVA proporcionará la data o históricos que permitirán examinar, comprobar o validar estos servicios con los hechos reales del banco.

Esta idea es la esencia del rápido crecimiento y gran acogida que han tenido los dos grandes promotores de aplicaciones a nivel mundial: Apple y Google. El desarrollo de aplicaciones para iOS y Android ha tenido un acelerado crecimiento debido a que desarrolladores a lo largo del globo pueden crear apps a través de las APIs de estas empresas, permitiendo la integración de estas apps al sistema operativo principal. Asimismo, la gran acogida es consecuencia de que las apps satisfacen las necesidades de los clientes o por lo menos un segmento de los mismos. Finalmente, el trabajo de investigación y desarrollo (i+D) e investigación de mercado se transfiere directamente a los developers.

En mi opinión, es un proceso que sin duda alguna, podrá:

- Reducir costes en varios departamentos del banco. Por ejemplo, i+D.
- Proporcionar/developar servicios más personalizados.
- Satisfacer a tiempo real una demanda continua ante nuevas tendencias/intereses de los clientes.
- Reducir las horas hombre del banco en desarrollar nuevos productos.
 - Un aumento en beta testers
 - Creación de departamentos de comprobación, validación e integración de servicios al sistema central.

Por otro lado, cabe destacar que estos servicios no se generaran en el mismo volumen que los desarrollados en Apple o Google debido al nicho de mercado de la banca. Sin embargo, dentro del crowdsourcing es un caso de estudio innovador.

Finalmente, Ignacio propuso investigar empresas como NEXTINIT o FINTONIC, las cuales tienen un concepto similar al buscado en BBVA OPEN 4 YOU. A nivel general, son plataformas muy similares a lo que comenzó siendo “tú cuentas”.

NEXTINIT, se basa en un proceso de crowdsourcing para la generación de ideas y proyectos a través de una plataforma digital. Sus áreas se dividen en:

- **A nivel de financiación**, utilizan un concepto similar al de Kickstarter o cuatrecasas, ya que se publican ideas o proyectos en la plataforma con un

monto fijo a financiar y los usuarios pueden optar por financiarlo todo o una fracción del mismo.

- **A nivel de integración en la comunidad utilizan un modelo similar al de Facebook**, donde pueden encontrar usuarios con los mismos intereses o con las capacidades necesarias para llevar a cabo el proyecto.
- **A nivel de recompensa**, aparte de la compensación monetaria, han implantado un método de gamificación (término utilizado por Luis Uguina), donde existe la posibilidad de ganar puntos, medallas o badges. Esto no sólo genera permanencia sino también captación de nuevos usuarios.

FINTONIC es una aplicación o third-party application que ayuda a entender, gestionar y simplificar de manera muy sencilla el dinero del usuario.

Características de FINTONIC expuestas en la Apple Store:

- “Accede a la información de todos tus bancos y tarjetas desde una única app. De un vistazo sabrás en que se te va el dinero y a qué ritmo. Fintonic clasifica tus gastos: hipoteca, alquiler, móvil, niños, compras del súper, gasolina, electricidad... ¡Automáticamente sin esfuerzos!”
- “Alertas útiles: comisiones, descubiertos, nominas, movimientos duplicados, ingresos, vencimientos de depósitos, seguros... ¡Despreocúpate! Fintonic te avisa cuando ocurre algo importante con tus cuentas.”
- “Sistema predictivo de gastos futuros antes de que se produzcan, siendo más fácil organizarse con antelación. Podrás también definir topes de gasto por categoría generándote un presupuesto.”
- “Máxima sencillez en el análisis de ingresos y gastos. Ordenados según tus parámetros personales.”
- “Fintonic extraerá conclusiones por ti, siendo proactivo adelantándose a tus necesidades. Relax para ti y tu dinero.”
- “Motor de búsqueda capaz de encontrar cualquier transacción de tus cuentas y tarjetas por concepto y categoría.”
- “Con Fintonic podrás planificar mejor tus finanzas y tener mayor control sobre tus gastos, Lo que te permitirá ahorrar.”
- “Control total de tus finanzas. Fintonic organiza todo por ti. Olvidate de cuadrar tickets y engorrosos excels.”
- “App 100% gratis.”

Annex IV – Survey

A-IV. 1. Questions of the survey

Question 1

Generally speaking, how would you classify your main activity?

- Academic
- Practitioner/Professional
- Both
- Other

Q1

Customize

Export ▼

Generally speaking, how would you classify your main activity?

Answered: 40 Skipped: 1

ANSWER CHOICES	RESPONSES
▼ Practitioner / Professional	50.00% 20
▼ Academic	32.50% 13
▼ Both	17.50% 7
TOTAL	40

Comments (1)

RESPONSES (1) TEXT ANALYSIS TAGS (0)

PAID FEATURE

Text Analysis lets you search and tag comments and see word clouds of frequent words and phrases. To get this feature, upgrade to a paid plan.

UPGRADE

Learn more »

Add tags ▼

Filter by tag ▼

Search responses

Showing 1 response

Volunteer

Question 2

Definition: Crowdsourcing is defined as “simply defined, crowdsourcing represents the act of a company or institution taking a function once performed by employees and outsource it to an undefined (and generally large) network of people in the form of an open call. This can take the form of peer-production (when the job is performed collaboratively), but is also undertaken by sole individuals. The crucial prerequisite is the use of the open call format and the large network of potential laborers” (Howe and Robinson, 2006). **How would you classify your knowledge about the crowdsourcing concept?**

- Expert
- High knowledge
- Medium knowledge
- Little knowledge
- Did not know about it

Q2

Customize

Export ▼

Definition: Crowdsourcing is defined as “simply defined, crowdsourcing represents the act of a company or institution taking a function once performed by employees and outsource it to an undefined (and generally large) network of people in the form of an open call. This can take the form of peer-production (when the job is performed collaboratively), but is also undertaken by sole individuals. The crucial prerequisite is the use of the open call format and the large network of potential laborers” (Howe and Robinson, 2006).- How would you classify your knowledge about the crowdsourcing concept?

Answered: 41 Skipped: 0

ANSWER CHOICES	RESPONSES	
▼ Expert	9.76%	4
▼ High	24.39%	10
▼ Medium	34.15%	14
▼ Little	26.83%	11
▼ Did not know about it	4.88%	2
Total Respondents: 41		

Question 3

Based on your experience, how would you classify the advances in “crowdsourcing” in the last 10 years?

- New paradigm
- High activity
- Medium activity
- Low presence

Q3

Customize

Export ▼

Based on your experience, how would you classify the advances in “crowdsourcing” in the last 10 years?

Answered: 41 Skipped: 0

ANSWER CHOICES ▼	RESPONSES ▼	
▼ New paradigm	17.07%	7
▼ High activity	56.10%	23
▼ Medium activity	21.95%	9
▼ Low presence	4.88%	2
TOTAL		41

Question 4

Based on your experience, do you think “crowdsourcing activities” have an impact in organizations?

- Yes
- No
- Only under certain circumstances

Q4

Customize

Export ▼

Based on your experience, do you think “crowdsourcing activities” have an impact in organizations?

Answered: 41 Skipped: 0

ANSWER CHOICES ▼	RESPONSES ▼	
▼ Yes	70.73%	29
▼ No	9.76%	4
▼ Only under certain circumstances	19.51%	8
TOTAL		41

Question 5

In our research on crowdsourcing activities and their impact on organizations, we have identified three levels at which organizations can be affected: Macro-level (Legitimacy/Societal level), the Meso-level (Organizational level) and the Micro-level (processes/individual level). **Do you think these three levels are valid to classify how organizations are affected?**

Question 5-A: Macro-level (Society)

- Valid
- Not valid
- Not clear

Question 5-B: Meso-level (Organization)

- Valid
- Not valid
- Not clear

Question 5-C: Micro-level (Processes/Individual)

- Valid
- Not valid
- Not clear

Q5

Customize

Export ▼

In our research on crowdsourcing activities and their impact on organizations, we have identified three levels at which organizations can be affected: Macro-level (Legitimacy/Societal level), the Meso-level (Organizational level) and the Micro-level (processes/individual level). Do you think these three levels are valid to classify how organizations are affected?

Answered: 41 Skipped: 0

Question 6

In our research we use a model with the three indicated main levels (Micro, Meso and Macro), and several sublevels for each of the main levels (see Palacios et al, 2016). **Can you evaluate them and the relevance each has for the main level?**

Question 6-A: Micro-level: Framing the issue

- Very relevant
- Relevant
- Little relevance
- No relevance
- No answer

Question 6-B: Micro-level: Engagement mechanism

- Very relevant
- Relevant
- Little relevance
- No relevance
- No answer

Question 6-C: Meso-level: Organizational factors

- Very relevant
- Relevant
- Little relevance
- No relevance
- No answer

Question 6-D: Meso-level: Definition of objectives

- Very relevant
- Relevant
- Little relevance
- No relevance
- No answer

Question 6-E: Macro-level: Legitimacy

- Very relevant
- Relevant
- Little relevance
- No relevance
- No answer

Question 6-F: Macro-level: Institutional logic

- Very relevant
- Relevant
- Little relevance
- No relevance
- No answer

Question 6-G: Macro-level: Code of conduct/ethic

- Very relevant
- Relevant
- Little relevance
- No relevance
- No answer

Question 6-H: Macro-level: Policies/legal

- Very relevant
- Relevant
- Little relevance
- No relevance
- No answer

Q6

Customize

Export ▼

In our research we use a model with the three indicated main levels (Micro,

In our research we use a model with the three indicated main levels (Micro, Meso and Macro), and several sublevels for each of the main levels. Can you evaluate them and the relevance each has for the main level?

Patañol et al, 2010). Can you evaluate them and the relevance each has for the main level?

Answered: 41 Skipped: 0

	VERY RELEVANT	RELEVANT	LITTLE RELEVANCE	NOT RELEVANT	(NO LABEL)	TOTAL
Micro-level: Framing the issue	42.50% 17	37.50% 15	7.50% 3	2.50% 1	10.00% 4	40
Micro-level: Engagement mechanism	43.90% 18	34.15% 14	12.20% 5	0.00% 0	9.76% 4	41
Meso-level: Organizational factors	29.27% 12	53.66% 22	7.32% 3	2.44% 1	7.32% 3	41
Meso-level: Definition of objectives	39.02% 16	41.46% 17	7.32% 3	2.44% 1	9.76% 4	41
Macro-level: Legitimacy	34.21% 13	39.47% 15	15.79% 6	2.63% 1	7.89% 3	38
Macro-level: Institutional logic	22.50% 9	45.00% 18	20.00% 8	5.00% 2	7.50% 3	40
Macro-level: Code of conduct/ethic	24.39% 10	31.71% 13	26.83% 11	9.76% 4	7.32% 3	41
Macro-level: Policies/legal	29.27% 12	31.71% 13	21.95% 9	9.76% 4	7.32% 3	41

Question 7

Is there any additional Macro sublevel which you find relevant that is not mentioned above?

- Yes
- No

Q7

Customize

Export ▼

Is there any additional Macro sublevel which you find relevant that is not mentioned above?

Answered: 40 Skipped: 1

ANSWER CHOICES ▼	RESPONSES ▼	
▼ Yes	2.50%	1
▼ No	97.50%	39
TOTAL		40

Question 8

If yes, could you mention it (them), briefly describe it and indicate at what level (Macro/Meso/Micro)?

- Text

Q8

Export ▼

If yes, could you mention it (them), briefly describe it and indicate at what level (Macro/Meso/Micro)?

Answered: 8 Skipped: 33

RESPONSES (8)

TEXT ANALYSIS

TAGS (0)

PAID FEATURE

Text Analysis lets you search and tag comments and see word clouds of frequent words and phrases. To get this feature, upgrade to a paid plan.

UPGRADE

Learn more »

Add tags ▼

Filter by tag ▼

Search responses

Q

?

Showing 8 responses

5/11/2018 11:02 PM	View respondent's answers
N/A	
5/11/2018 4:26 PM	View respondent's answers
N/A	
5/11/2018 4:12 PM	View respondent's answers
No	
5/10/2018 11:15 AM	View respondent's answers
None	
5/9/2018 3:32 PM	View respondent's answers
Meso - Coding and input integration	
5/1/2018 2:27 PM	View respondent's answers

Question 9

Then we take different crowdsourcing models in the literature and the elements defined in each model to classify/characterize crowdsourcing initiatives (process, type of task, reward, etc.), and we compare them with the sublevels just mentioned above. **Do you think it is useful for measuring the impact in the organization to associate each dimension of those crowdsourcing models with one or more of the sublevels of our model?**

- Yes
- No
- Other

Q9

Customize

Export ▼

Then we take different crowdsourcing models in the literature and the elements defined in each model to classify/characterize crowdsourcing initiatives (process, type of task, reward, etc.), and we compare them with the sublevels just mentioned above. Do you think it is useful for measuring the impact in the organization to associate each dimension of those crowdsourcing models with one or more of the sublevels of our model?

Answered: 41 Skipped: 0

ANSWER CHOICES	RESPONSES
▼ Yes	80.49% 33
▼ No	9.76% 4
▼ Other (please specify) Responses	9.76% 4

RESPONSES (4) TEXT ANALYSIS TAGS (0)

PAID FEATURE

Text Analysis lets you search and tag comments and see word clouds of frequent words and phrases. To get this feature, upgrade to a paid plan.

UPGRADE

[Learn more »](#)

Add tags ▼

Filter by tag ▼

Search responses

A-IV. 2. Answers to the survey

Nr	Q1	Q2	Q3	Q4	Q5-Macro	Q5-Meso	Q5-Micro	Q6-Framing the issue	Q6-Engagement mechanism	Q6-Organizational factors	Q6-Definition of objectives	Q6-Legitimacy	Q6-Institutional Logic	Q6-Code of conduct/ethic	Q6-Policies/legal	Q7	Q8	Q9
	Academic (A)	Expert (Ex)	New Paradigm (N)	Yes (Y)	Valid (V)	Valid (V)	Valid (V)	Very Relevant (VR)	Very Relevant (VR)	Very Relevant (VR)	Very Relevant (VR)	Very Relevant (VR)	Very Relevant (VR)	Very Relevant (VR)	Very Relevant (VR)	Yes (Y)	Text	Yes (Y)
	Practitioner (P)	High (H)	Activity (H)	No (N)	Valid (NV)	Valid (NV)	Valid (NV)	Relevant (Rx)	Relevant (Rx)	Relevant (Rx)	Relevant (Rx)	Relevant (Rx)	Relevant (Rx)	Relevant (Rx)	Relevant (Rx)	No (N)		No (N)
	Both (B)	Medium (M)	Activity (M)	Only (O)	Clear (NC)	Clear (NC)	Clear (NC)	Little Relevance (LR)	Little Relevance (LR)	Little Relevance (LR)	Little Relevance (LR)	Little Relevance (LR)	Little Relevance (LR)	Little Relevance (LR)	Little Relevance (LR)			Other (text)
	Other (Text)	Little (L)	Low presence (L)					No Relevance (NR)	No Relevance (NR)	No Relevance (NR)	No Relevance (NR)	No Relevance (NR)	No Relevance (NR)	No Relevance (NR)	No Relevance (NR)			
	No answer (N/A)	Not know (N)						No answer (N/A)	No answer (N/A)	No answer (N/A)	No answer (N/A)	No answer (N/A)	No answer (N/A)	No answer (N/A)	No answer (N/A)			
1	A	H	N	Y	V	V	V	VR	VR	VR	VR	VR	VR	VR	VR	N	Meso-Coding	Y
2	A	E	M	O	NC	V	V	VR	R	R	VR	R	R	R	R	Y		Y
3	A	H	H	Y	V	V	V	VR	R	VR	R	R	LR	NR	NR	N		Y
4	A	M	M	Y	V	V	V		VR	R	VR			R	R	N		Y
5	A	L	H	Y	NV	V	V									N		Y
6	B	H	N	Y	V	V	NC	LR	LR	VR	VR	VR	VR	VR	VR	N		Y
7	A	H	H	Y	V	V	V	VR	VR	VR	VR	VR	VR	LR	LR	N		Not sure the best way
8	B	M	H	Y	NC	V	V	R	R	VR	R	VR	R	R	VR	N		N
9	A	L	M	Y	V	V	V	VR	VR	R	VR	R	LR	R	R	N	None	Y
10	P	L	L	O	V	V	NC			R		R	R	LR	VR			Is impact

Volunte																		pondera
11	er	M	M	Y	NC	V	V	R	R	R	R	LR	LR	LR	LR	N	Y	
12	A	N	M	Y	V	V	V									N	N	
13	B	M	H	Y	V	V	NC	VR	VR	R	VR	VR	R	VR	VR	N	Y	
14	P	L	L	N	V	V	V	LR	LR	R	R	R	VR	VR	VR	N	Y	
15	B	E	H	Y	V	V	V	VR	VR	VR	VR	VR	VR	VR	VR	N	Y	
16	B	L	H	Y	V	V	V	R	R	R	R	R	R	R	R	N	No	Y
17	P	N	H	Y	NC	NC	V	VR	VR	R	LR	VR	LR	VR	NR	N		Y
18	P	M	H	N	V	V	V	R	R	LR	R	LR	R	R	VR	N		Y
19	P	L	H	Y	V	V	V	R	VR	R	R	VR	R	VR	R	N		Y
20	A	H	H	O	NC	V	V	VR	VR	R	VR	R	LR	NR	NR	N		Question not clear
21	P	M	N	Y	NC	V	V	R	VR	R	R		LR	LR	LR	N		Y
22	P	M	N	O	NC	V	V	VR	R	R	VR	LR	R	VR	VR	N	N/A	Y
23	P	M	H	Y	V	V	V	R	VR	R	VR	LR	R	R	R	N	N/A	Y
24	P	M	H	Y	V	NC	V	R	VR	VR	VR	R	R	LR	LR	N		Y
25	A	M	N	O	V	V	V	VR	VR	R	VR	R	R	R	LR	N		Y
26	P	E	H	O	V	NV	NC	R	LR	NR	NR	R	VR	LR	R	N		N
27	P	H	H	Y	V	V	V	LR	LR	R	LR	R	R	LR	R	N		Y
28	A	L	H	Y	V	V	V									N		Not enough knowledge
29	P	M	M	N	NV	NC	V	R	LR	LR	R	LR	NR	LR	LR	N		Y
30	B	H	H	Y	V	NC	V	VR	VR	LR	R	VR	VR	VR	VR	N		Y
31	P	H	H	Y	V	V	NC	VR	R	R	R	R	LR	R	LR	N	Not really	Y
32	P	M	H	Y	NC	V	V	VR	R	VR	R	R	R	NR	LR	N	No	Y
33	B	E	H	Y	V	V	V	R	R	R	R	LR	R	LR	LR	N		Y

																Not releva nt	
34	P	H	H	Y	NV	V	V	R	R	R	R	VR	VR	LR	R	N	Y
35	P	M	M	Y	NC	V	V	VR	VR	VR	VR	R	R	R	R	N	Y
36	P	L	N	O	V	V	V	VR	VR	VR	VR	VR	VR	VR	VR	N	Y
37	P	M	H	Y	NC	V	V	R	VR	R	R	VR	R	R	R	N	Y
38	P	L	M	O	V	V	V	R	R	R	R	R	R	R	R	N	Y
39	P	L	M	N	NC	V	V	VR	VR	VR	VR	VR	R	R	R	N	Y
40	A	L	N	Y	NC	V	V	R	R	VR	LR		LR	LR	VR	N	Y
41	A	H	H	Y	NV	V	V	NR	R	R	R	NR	NR	NR	NR	N	N