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ADMINISTRACIÓN Y DIRECCIÓN DE EMPRESAS**

**An investigation into the process of R&D&I project management: a
case study on ZABALA Innovation Consulting S.A.**

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Abstract

In a perfect world, projects would always be implemented on time and within budget. Nevertheless, evidences show that this is far from the reality in most situations, especially when talking about R&D&I projects. Estimates suggest that just 20% of the R&D&I projects planned are actually implemented successfully. The purpose of this end-of-degree project is, therefore, to shed light on the causes of the problem and to give advice on how firms could become more effective on the implementation of their R&D&I projects. This paper meets the research aim through an extensive study of the relevant literature and the implementation of practical research. The latter was conducted by a case study, where a company called ZABALA Innovation Consulting, S.A. was exhaustively analysed. In fact, its management process will reveal some key factors to make R&D&I projects more bound to succeed.

Key words: Innovation, Project management, R&D&I, Failure, ZABALA.

TABLE OF CONTENTS

1. INTRODUCTION	1
2. LITERATURE REVIEW	3
2.1. Defining innovation	3
2.2. Management of innovation: fiction or reality?	4
2.3. Project management approach to innovation management	5
2.4. Research and development (R&D) vs. Innovation	6
3. QUANTITATIVE ASSESSMENT OF R&D&I PROJECTS' FAILURE.....	7
3.1. R&D&I projects' failure: causes.....	8
3.2. The need for Project Management Consulting.....	10
4. RESEARCH METHODOLOGY	12
4.1. Data collection: the case study research strategy.....	12
4.2. Introduction to ZABALA Innovation Consulting S.A.....	13
4.3. The management process of R&D&I projects in ZABALA	16
4.4. Quantitative assessment of the efficiency of the process: internal statistics	33
4.5. Limitations, reliability and internal validity of the case study	34
4.6. Ethics	34
5. KEY FINDINGS	36
6. CONCLUSIONS.....	38
6.1. Summary of key findings and resulting conclusions	38
6.2. External validity of the document	38
6.3. Recommendations for future research.....	39
6.4. Acquired competences.....	39
7. REFERENCE LIST.....	42
8. LIST OF FIGURES.....	46
9. LIST OF TABLES.....	59

1. INTRODUCTION

“It’s war: innovate or die”

Robert Gravlin Cooper

(Professor Emeritus of Marketing and Technology Management at the DeGroot School of Business at McMaster University, Canada)

This quote of the famous writer Robert G. Cooper (2005, p. 4) illustrates how innovation has become a matter of life and death with regards to business’ success and survival. Whether it concerns firms that need to compete for profit or market share (Cooper, 2005; Hamel & Prahalad, 1998; Kaplan & Norton, 1992) or public entities that need to improve their services (Hartley 2005, Mulgan & Albury, 2003), does not matter. The need for innovation is imperative (Tidd, Bessant & Pavitt, 2005).

But at the same time, innovation is not easy to manage. As Levitt (2002, p. 2) states, “many people who are full of innovative ideas simply do not understand how an organization must operate to get things done.” In fact, the development of innovative projects is a very complex and risky activity that requires a supporting internal organisational structure comprised by adequate financial resources and appropriate skills and knowledge (Radas & Bozic, 2012). Nevertheless, even with the adequate resources and environment, many companies are doomed to see their R&D&I projects go unrealised.

Much has been written about the planning phase of R&D&I projects, but a gap still exists between knowing what to do and actually doing it. (Brinkschröder, 2014)

Evidences show that over the time, there has been a multitude of R&D&I projects that have failed due to their bad management. According to several experts (Asplund & Sandin, 1999; Cozijnsen, Vrakking, & van IJzerloo, 2000), despite the effort and energy put forward into the projects’ planning, estimates suggest that four out of every five projects ever initiated proves to be a failure.

Therefore, in view of the above, a primordial need has been identified to systematically assess factors which may be decisive for success and failure of innovation. Consequently, the research problem in which this end-of-degree project will concentrate is the following one; once companies conceive an innovative idea and translate it in a project proposal, what the path may be for crossing the threshold to its actual fructuous development.

The motivation driving this work has been the practical experience that I have gained as an intern in the administration and finance departments of a company called ZABALA

Innovation Consulting S.A. (hereinafter, ZABALA). The analysis of its project management system made me realise that R&D&I projects are more bound to be successful in Spain when they are continuously monitored. In fact, studies suggest that firms tend to focus on consciously planning R&D&I projects rather than managing them afterwards. Therefore, triggered by the practical know-how acquired in ZABALA, I will try to analyse whether the use of external consultancy firms is necessary when companies lack the necessary resources in order to keep close tracking of their R&D&I projects.

Nevertheless, it must be acknowledged that this paper will just focus on one of the many possible effective ways in which companies could successfully manage the implementation of their R&D&I projects; by subcontracting services from a consultancy firm to manage and control the entire process. Nevertheless, it must be mentioned that it is not the only way, as many companies opt to steer the entire process themselves either partially or totally. The problem with this last approach is that firms need to have specific employees working exclusively on the management of R&D&I projects, something that is not very common within Spanish firms as we will see in next section.

Furthermore, based on my background and professional situation, this essay will shed light on the way of managing R&D&I projects in Spain, a country where “bureaucracy stifles scientific research” (The American Interest, 2013). Therefore, it must be taken into account the fact that such a high failure rate among the implementation on R&D&I projects should be understood under an environment characterised by the burden of paperwork. Likewise, Spain is also known by its current economic stagnation; even if both the European Commission and the IMF have recently raised their 2016 economic growth forecasts for Spain, the country feels still giddy.

Thus, taking all these facts into account and once the research aim and context provided, the structure of the end-of-degree project will be presented: this paper is composed of six themed chapters, including this introductory chapter that provides the reader with background information to the field of study. The second chapter reviews the existing literature related to R&D&I project management, and the third one gives further insight of the literature by analysing quantitative data. The fourth chapter entitled ‘RESEARCH METHODOLOGY’ describes and justifies the research strategy and data collection technique used – the case study –, whilst also taking into account the limitations and ethical principles of the empirical research conducted. Moreover, chapter five reports some of the key findings from the case study, and chapter six concludes the present paper by providing a summary, some limitations and recommendations for future research.

2. LITERATURE REVIEW

A large body of literature around the topic of project failure has emerged during the past 20 years (Van der Panne, Van Beers & Kleinknecht, 2003), especially with respect to the area of R&D&I. Nonetheless, it could be asserted that this literature still remains inconclusive.

2.1. Defining innovation

Innovation is a buzzword that has brought a great deal of turmoil among scholars for hundreds of years (Trott, 2008). The theories on innovation have their origins in Joseph Schumpeter's works (1934, 1939, 1942), who was the first economist to challenge the views of the classical economists, but over the years, illustrates have conducted so many studies that its meaning has gotten lost in the abyss of business jargon (Verloop, 2004).

Nowadays, there seems to be little agreement within the literature as to what innovation actually is and, therefore, there are different definitions and perspectives on this topic.

Some authors define the concept of innovation in a broad way; for instance, Schumpeter (1939, p. 84) claimed that innovation is "the commercial use of scientific discovery or invention." Likewise, Pastakia (1996) offered even a much broader definition of innovation, alleging that it is "a new and significantly better way of doing things" which entails an improvement in productivity or saves costs, effort or time. Nevertheless, Tidd et. al. (2005) gave a more comprehensive definition by claiming that it is not a single action, but a process that is comprised by different sub-processes. It is not just the conception of an idea, nor the invention of something, nor its development or commercialisation, but an interaction of all of them.

Indeed, Hartley (2006) indicates that innovation is "the *successful* development, implementation and use of new or structurally improved products, processes, services or organisational forms" (cited in Aljohani, 2015, p.6). On the contrary, Jacobs and Snijders (2008) argue that innovation does not fundamentally need to be successful to call it innovation, but attempting something new which may hopefully provide added value.

Moreover, other experts discuss whether the commercialisation phase forms part of the innovation management process or not; for instance, Drucker (1985) claims that it is part of the process, whereas Tidd et. al. (2005) not.

Furthermore, some illustrates claim that the boundaries between invention and innovation should not be blurred (Carlino & Kerr, 2014). Many up-and-coming entrepreneurs think that these concepts are one and the same (Grasty, 2012), nonetheless, Suarez-Villa (2007) alleges that invention is the discovery of new ideas, while innovation is about implementing them.

Nonetheless, in spite of all the existing dimensions regarding the definition of innovation, most of the authors agree in the following point: innovation is not only an idea, it is also the implementation of it (Levitt, 2002).

Following this rationale, ZABALA – the firm that will be studied on the present paper – defines innovation in the following way:

What is Innovation. Innovation is a process that transforms markets and allows different stakeholders to advance. Innovation is also about taking and facing risks. Innovating is facing up to a challenge, as well as planning, coordinating and allocating sufficient human and material resources to achieve the defined objectives. Setting off to a better future requires enhancing innovative solutions and concepts in the corporate strategy. Innovate? Yes, but in a planned and coordinated way.

Definition of innovation according to ZABALA's newsletter 2016

In the definition above, it is assumed that innovation can be “planned and coordinated” in order to control the implemented outcome. Nevertheless, the following section will do a quick review of the literature on innovation management to see different opinions.

2.2. Management of innovation: fiction or reality?

Regardless of the extensive body of literature around the concept of innovation, the literature review regarding the topic of innovation management is relatively young. This subject has become increasingly covered in scientific and management literature over the last years (*see figure 1 in appendix*). Nevertheless, despite the increasing research emerging around this topic, there is still a lot of controversy when deciding whether innovation can be managed or not and determining what it consists on.

According to Chesbrough (2004, p. 1), innovation cannot be managed at the early stages of innovative projects, as there is “significant technical and market uncertainty”.

Nevertheless, Drucker (1994) suggests that innovation is the only way in which firms can hope to prosper - if not survive – in a period of rapid changes. Thus, as innovation is considered to be the only way to transform changes into opportunities, firms require to

organise innovation as a *systematic activity*. Therefore, in Drucker's definition, innovation management appears to be a real task to be introduced in companies' day-to-day activities.

Furthermore, concerning the definition of innovation management, it is claimed to be a process within business organisations which facilitates the survival of firms in the market through increasing its competitive advantage (Adams, Bessant, & Phelps, 2006). Nevertheless, Hansen and Birkinshaw (2007) go one step further and claim that the management of innovation is not just a process incorporated in every organisation, but an ability that some firms have. In fact, this stream of thought claims that innovation management relates to "the active and conscious organisation, control and execution of activities that lead to innovation" (Eveleens, 2010, p. 3)

Thus, following this second definition, it has been considered interesting to conduct a thorough research in order to investigate how firms could develop this ability to manage innovation.

2.3. Project management approach to innovation management

Contrary to those who believe that the creative process is the most difficult part of innovation management (Burrus, 2013), Levitt (2002) claims that the biggest challenge lays on the inherent difficulty in implementing the change that the innovation entails. Consequently, many authors have investigated the way in which innovation management could be conducted.

A strong body of literature has been identified whose supporters state that *project management* has a strong influence on innovation management (Lopes, Kissimoto, Salerno, Laurind & Carvalho, 2012). In fact, experts such as Joyce Wycoff allege that *project management* could be the engine for implementing new ideas, and thus, to lead the process of innovation management, as there are some techniques and strategic tools that could make the process more effective.

On the contrary, other authors argue that innovation cannot be put into a process or be managed like if it were a business process. (Küpper, Lorenz, Maurer, & Wagner, 2013)

However, over the time, some empirical studies such as the one conducted by PMI (1994) have proved that the first stream of thought could be right; firms applying project structured processes to innovation management may reduce risk in the business process and might help to obtain better innovation results compared to their peers.

In conclusion, as project management could be an appropriate approach in order to manage innovation, this end-of-degree project will concentrate on its analysis.

2.4. Research and development (R&D) vs. Innovation

Somehow, it is unavoidable to think about the concept of R&D when thinking about innovation. These terms have been used together so many times, that many people now use them interchangeably. Nevertheless, even if there might be a link between them, they have different meanings.

Within the framework of project management, in accordance with the approach advocated by the Frascati Manual, R&D is meant to be the “creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications” (OECD, 2002, Frascati Manual, [B.56.], p. 15).

Likewise, other authors are more precise and claim that R&D projects are activities with a long amortization period and a high technical risk that generate new knowledge; this knowledge is normally associated to social needs for which neither clients nor suppliers exist yet (AENOR, 2016).

In this way, Audretsch and Callejón (2007) claim that it is not necessary to conduct R&D activities in order to innovate; for instance, a firm can innovate by using technologies from other companies. Thus, it could be alleged that innovation is more the implementation of a new or significantly improved product or process, whereas R&D refers more to the conception of completely new knowledge.

Given these definitions, it seems that the difference between these concepts may still remain murky. Nevertheless, some organisms such as MINECO – The Spanish Finance Ministry – require to accurately differentiate them when conducting projects since they have different economic implications for firms (i.e. different tax reliefs) as it will be seen in section 4.3.10. of the present paper.

Therefore, in view of the generated turmoil and meticulousness of some organisms, a legal reference framework was developed in Spain in order to help distinguish R&D projects from innovation projects (UNE 166001 and Royal Decree 1432/2003). Not only that, but the so-called *certifying agencies* (e.g. AENOR, ACIE or EQA) were constituted in order to issue certificates that could allege the nature of each project – either R&D or innovation. This last approach costs around 2.000€ due to the entailed workload and complexity.

3. QUANTITATIVE ASSESSMENT OF R&D&I PROJECTS' FAILURE

This section will collect a meta-analysis related to the literature above. Anyhow, firstly, as a background, some general data have been collected regarding the current panorama of R&D&I projects conducted in Spain.

Firstly, it could be asserted that there has been an increasing trend all over the world – and especially in Spain – to spend money on R&D&I activities (*see figure 2 in appendix*), which reflects the imperative need for this kind of activities in today's world. More specifically, Spain spent 17,707 million \$ in R&D activities in 2014, ranked as the sixteenth country with the highest R&D expenditure in the world.

Moreover, this increasing pattern on R&D&I expenditure is consistent – to a greater or lesser extent – among all the sectors of operation; private firms, tertiary education, public administrations and non-profit organisations (*see figure 3 in appendix*). Nonetheless, it must be acknowledged that private firms are by large the ones that most invest in R&D&I activities, being more than the 50% of the total expenditure theirs.

In addition, another indicator of the increasing relevance of R&D&I activities in Spain is the increasing number of technicians on the area over the time (*see figure 4 in appendix*) – although there was an inflexion point during the first years of economic stagnation after the economic and financial crisis started in 2007-2008.

In this way, this upward trend towards conducting more R&D&I activities over the time cannot be backed up if there are not enough qualified people to steer them; that is why statistics show that there has been a parallel increase on the number of workers with superior studies all over the world between 2000 and 2013 (*see figure 5 in appendix*) sufficient so as to support this R&D&I rising trend.

Moreover, the increasing importance of innovation and R&D could be further substantiated by analysing the strategy of Public Administrations. According to the data collected from MINECO, the adopted Spanish public policies during 2000-2014 show a clear trend towards allocating more and more public funds to financing R&D&I projects as time goes by (*see figure 6 in appendix*). However, it must be acknowledged that there was a small decrease on the appropriations of funds during 2010-2012 due to the austere policies implemented after the Spanish economic crisis (2007-2008).

Notwithstanding the foregoing, it must be mentioned that the R&D&I activities' intensity is not homogeneous all over Spain; Madrid, the Basque Country, Navarre and Catalonia are – in that order – the autonomous communities with highest R&D&I activities intensity (*see figure 7 and figure 8 in appendix*).

Summing up, R&D and innovation activities appear to play an important role in Spain regardless of the operational sector in which they are executed – i.e. private firms, tertiary education, public administrations or non-profit organisations (Casey & Hackett, 2014). In fact, millions of euros are being invested in this kind of activities, therefore, now more than ever, there are further incentives to assess why so many projects fail at their implementation phase. Perhaps, by systematically assessing some of the main failure causes, entities would be able to reduce the entailed risks of investing in R&D&I projects.

3.1. R&D&I projects' failure: causes

Divergent opinions exist concerning the possible failure causes of R&D&I projects; some researches determine a group of specific factors as being crucial, whereas other researches ignore the very same factors and expose completely different ones.

According to Gottfredson and Aspinall (2005), one of the reasons why projects fail at their implementation phase is because of the embedded technical unfeasibility. At first sight, this aspect seems to be the first reason coming to one's mind that explains why R&D&I projects fail. For instance, a person working in the marketing department can have a revolutionary idea for producing the new design of a product. Nonetheless, this person might lack engineering-related knowledge to know if it is technically feasible to manufacture it or not. Therefore, if there finally seems to be no machine able to back it up, the project would need to be abandoned.

Likewise, Payne (2014) agrees with this argument and extends it a little bit; he claims that, at the outset of R&D&I projects, managers put “the ‘wow’ before the ‘how’”. They tend to omit difficult practical details – not just technical ones, but also economical ones such as the way of funding the proposal – at the front end of the project, and consequently, even if proposals achieve a ‘wow’, they are finally backed down. In fact, some authors consider the lack of financial resources a predominant factor of failure (Rubenstein, Chakrabarti, OKeefe, Souder, and Young, 1976). Therefore, Payne (2014) recommends teeing-up projects at their conception rather than when they are being developed, even if this

supposes killing the innovativeness of a project due to the technical and economical restrictions imposed.

Nevertheless, experts argue that the unrealistic techno-economic expectations risen at the outset of the project are not the major cause for R&D&I projects' failure – as they can most of the times be corrected over the course of the project –, but the overall poor management of the process (Majeed, Shah, Qazi & Maqsood, 2013). According to Cozijnsen et al. (2000) adequate management of time, costs, information and decision-making determines 60% of the projects' viability.

Likewise, a research conducted by the independent company Spikes Cavell (1998) in the UK – which was requested by the French computer manufacturer BULL – also supported this last argument (*see figure 9 in appendix*). According to the results from the conducted polls, the most common reason why projects fail is that deadlines are missed; this means that companies often lag behind schedule, and projects are not implemented on time so as to anticipate competitors. Another cause seems to be the exceeded budget; firms try to make accurate forecasts of the future expenses in which they will incur as a consequence of the execution of the project (cost of materials, salaries and wages, general costs, etc.). Nevertheless, according to Willcocks (1994), companies tend to underestimate these future costs and consequently, the initial estimated budgets appear to be inaccurate. Hence, the firm faces a situation where it lacks the necessary resources for conducting the project, abandoning it at half-way. Finally, two other causes also seem to be quite frequent; the lack of appropriate planning and the inadequate coordination of resources.

Indeed, the survey conducted by this company also showed that most of the times, the major reason why the projects fail at their development stage is the following one; the negative synergies originated from the overlap or concurrence of two or more of the causes mentioned in *figure 9 in appendix*.

In view of the above study, and contrary to what Gottfredson and Aspinall (2005) believe, the most common causes for project failure seem to be related to the overall mismanagement of the process rather than to the technical unfeasibility of the proposal.

In conclusion, there is no doubt that decisions made at the front-end of a project largely determine not only the outcome of the innovation process, but also the involved costs, time frame and the resources needed to conduct the process (Bröring & Leker, 2004;

Michaud & Llerena, 2006). Hence, before a project is implemented, a thorough research should be done evaluating the technical and economic feasibility of the proposal (i.e. the abilities of the workforce, the assets of the company, its capital structure, its working capital, etc.). However, this is not enough, as empirical studies have proved that projects are bound to fail as well at subsequent stages because of unexpected contingencies. Thus, a good project manager should be able to successfully plan, monitor and control the full innovation management process – from its planning phase until its actual execution – in order to mitigate the risk of failure.

3.2. The need for Project Management Consulting

According to the Central Companies Directory (CCD), in 2013 there were 3,142,928 firms in Spain, from which 3,139,106 (99.9%) were SMEs (between 0 and 249 employees). Moreover, the great majority of the Spanish companies (95.7%) are micro sized (between 0 and 9 employees) – *see figure 10 in appendix*. Thus, most of the firms usually face financial constraints that limit their ability to fully staff operations; that is why business owners in Spain tend to hire multifunctional and multitasking workers (Blasco, 2014). Thence, it is very unlikely that these companies have an independent department in charge of leading the R&D&I activities conducted, or even a unique employee within the firm devoting a great part of his or her time to manage R&D&I projects.

In view of all this, developing a project management approach that could permit a close follow-up assistance in such small firms could be almost impossible, as workers normally multitask and need to devote their time to primary activities other than R&D&I project management.

Therefore, many companies in Spain opt to seek for assistance from consulting firms, decentralising the management of their projects. According to a study conducted by FEACO (2010), as time goes by, services from R&D&I consulting firms have been more and more demanded (*see figure 11 in appendix*) up to a point that during 2014, the total value of sales by Spanish consultancy firms rose by 1.8% to 10.7 billion (WEF, 2011).

In fact, the use of R&D&I consultancy firms may entail advantages that a firm would not be able to take advantage of if the company steered the entire management process itself. On the one hand, the administrative burden is significantly reduced, letting companies concentrate on the activities specific to their business rather than on the management of activities that have no added-value. Moreover, if the company has no experience on the

management of R&D&I projects, conducting agreements with external consulting firms may ensure the efficient development of the process. Furthermore, the firm could form partnerships with consulting firms as a way to avoid biases (i.e. pro-innovation bias) regarding the projects' viability. However, it must be taken into account that the use of external R&D&I consultancy firms entails some disadvantages as well; for instance, confidential information might be shared, the firm might incur in additional expenses because of hidden costs (i.e. signing contracts), sub-standard quality output might be delivered as part of the process is delocalised, etc.

4. RESEARCH METHODOLOGY: case study on ZABALA Innovation Consulting

This chapter will consist of three parts; in the first one, the research methodology and methods employed will be justified. Afterwards, background information regarding ZABALA will be presented, and finally, the company's entire R&D&I project management process will be explained.

4.1. Data collection: the case study research strategy

With the purpose of achieving a better understanding on how the process of R&D&I projects' management works in order to detect possible inefficiencies that cause project failure, it has been decided to follow a study based on a qualitative approach rather than a quantitative study. This decision has been made based on the argument provided by Marshal and Rossman (1999, p. 4); qualitative approaches provide "quality, depth and richness in the findings", while numerical data may not provide the critical descriptive details required for this study.

Likewise, after a thorough research, it has been concluded that selecting the case study method as the main research strategy for this essay would be appropriate. Yin (2003) asserts that case studies are suitable when studying a phenomenon which cannot be separated from its context, as in this case, where innovation cannot be studied on its own, but in the context of the Spanish institutional framework.

Moreover, there has been a further incentive in order to choose the case study as a research strategy; the opportunity that I was given at ZABALA Innovation Consulting S.A. in order to overlook the process of R&D&I projects' management. I had the chance to give support on the process from different perspectives, since during 5 months, I worked at the *administration* and *finance* departments executing different tasks associated to different stages.

Thus, it has been considered appropriate to develop a case study that consists on describing ZABALA's R&D&I project management process in detail. Perhaps, its analysis may be useful for both, detecting possible inefficiencies and assessing factors for project success. Nevertheless, before plunging directly into the insights of ZABALA's project management process, the following section will provide background information to comprehensively understand the case study.

4.2. Introduction to ZABALA Innovation Consulting, S.A.

ZABALA Innovation Consulting, S. A. is an independent consultancy firm founded in 1986 which has currently a strong worldwide presence. Its core aim is to help many leading companies, across a range of industries, to turn innovation into their key competitive factor by helping them benefit from the many R&D&I funding schemes available at regional, national and European level, as well as from tax incentives available (*see figure 12 in appendix for more details*). Therefore, ZABALA is responsible for advising and giving assistance to part of the R&D&I project management process. Its client portfolio is composed by two kinds of customers:

- Industrial and service companies
- Regional, national and Community Administrations.

4.2.1. Location, offices and workforce

The firm has seven delegations scattered within three different countries; Spain, Belgium and the UK (*see maroon boxes in figure 13 in appendix*). They are characterised by their high information flow, as they are intercommunicated by the latest technologies available; they use tools such as *Studio* – an ad hoc document manager that helps the organisation meet all its needs by enabling the secure and ordered sharing of corporate documentation –, *Microsoft Lync* – an enterprise software that helps employees keep communicated by instant messaging – or *Microsoft Outlook* – a personal email service. These allow projects to be delocalised; this is, projects of companies located in a country can be transferred to be managed in another one.

Moreover, the firm also has partnership agreements with other companies around the world (*highlighted in grey boxes in figure 13 in appendix*).

In addition, employees are distributed geographically over three countries in the following way:

- HEADQUARTER
 - Mutilva (Navarre, Spain): 119 employees.
- OTHER OFFICES
 - Brussels (Belgium): 9 employees.
 - Madrid (Madrid, Spain): 56 employees.
 - Barcelona (Cataluña, Spain): 17 employees.
 - Sevilla (Andalucía, Spain): 6 employees.
 - Valencia (Valencia, Spain): 5 employees.
 - Vigo (Galicia, Spain): 5 employees.
 - London (United Kingdom): 3 employees.

Finally, it must be mentioned that ZABALA is classified as a SME in Spain, because – as defined by the European Commission – it has currently less than 250 workers and its annual balance sheet is not superior to 43 million of euros. Nevertheless, it must be acknowledged that the company’s workforce has experienced a substantial increase over the years (*see figure 14 in appendix*).

4.2.2. *Structure of the company*

Regarding the internal organisation of the company, it is structured in a matrix way; employees are classified by both, functions and product. Therefore, teams of employees are used in order to accomplish work, taking advantage of the best of both separate structures (the functional and product structures), as well as making up for the weaknesses of functional and decentralised forms (Elsaid, Okasha & Abdelghaly, 2013). Six different areas can be distinguished (*see figure 15 in appendix*); the national area, the international area, the area of studies, the APE (*Assistance to Strategic Projects*) department, the administrative department and the finance department. On the other hand, the firm is divided geographically in its 7 different offices as previously mentioned; Madrid, Barcelona, Sevilla, Valencia, Vigo, London, Brussels and Mutilva. The offices from Mutilva and Madrid are the biggest ones, therefore, in order to maintain the constant flow of information, they have an additional internal subdivision; there are different groups of technicians classified by their area of expertise, thus, the workload is allocated depending on the type of client they deal with (i.e. clients specialised in the pharmaceutical area such as CINFA are allocated to the ABSQ team).

It must be acknowledged that this end-of-degree project will just focus on the R&D&I project assistance provided at the office of Mutilva, where I have been doing my internship.

4.2.3. *Client portfolio of the company*

Regarding ZABALA’s client portfolio, it must be taken into account that it is a business-to-business company. It works in all kinds of sectors (industrial, pharmaceutical, chemistry, telecommunications, etc.) and its clients are generally the following institutions:

- **Innovative firms:** Innovative Technology-Based Companies (EIBT), big business groups, etc. as long as they all have an innovative nature.
- **Research Centres and Private Universities.**

- **Technology Centres and Public Universities:** this is, Public Research Organisations in general.
- **Public Entities:** public firms, councils, public corporations, etc.
- **Public Administrations** at regional, national and Community level. They are strategic clients for ZABALA.

All these clients can have a stronger or weaker bond with ZABALA, depending on the type of relationship between both entities. Two kind of connections could be distinguished; on the one hand, **habitual companies** can be distinguished. They usually have tighter ties with ZABALA as every time they need to conduct a R&D&I project they resort to this consultancy firm to manage the entire process. Therefore, they are charged a **periodic fee** for the habitual services provided. From the 600 clients that ZABALA manages, 310 of them have periodic fee contracts with the firm. On the other hand, **sporadic companies** can be distinguished. They are characterised because of their weaker bonds with the consultancy firm. They normally work with ZABALA when they get involved in a cooperative project with other partners who benefit from the services of ZABALA on a regular basis or when they need to conduct a study. It must be acknowledged that Public Administrations are the most common clients under this kind of contract agreement, as they only request isolated works from time to time.

4.2.4. *Competitors*

After a thorough research, it has been concluded that ZABALA's direct competitors are consultancy firms located at state-level (*see table 1 in appendix*). These companies have similar characteristics to ZABALA in terms of number of employees, location of their offices, services provided, etc.

Nevertheless, it must be mentioned that big companies such as Deloitte, KPMG, PwC, Europraxis, INFIDE, IDETRA, CARSA, BANTEC, etc. have started offering R&D&I services and are actually gaining market share as well.

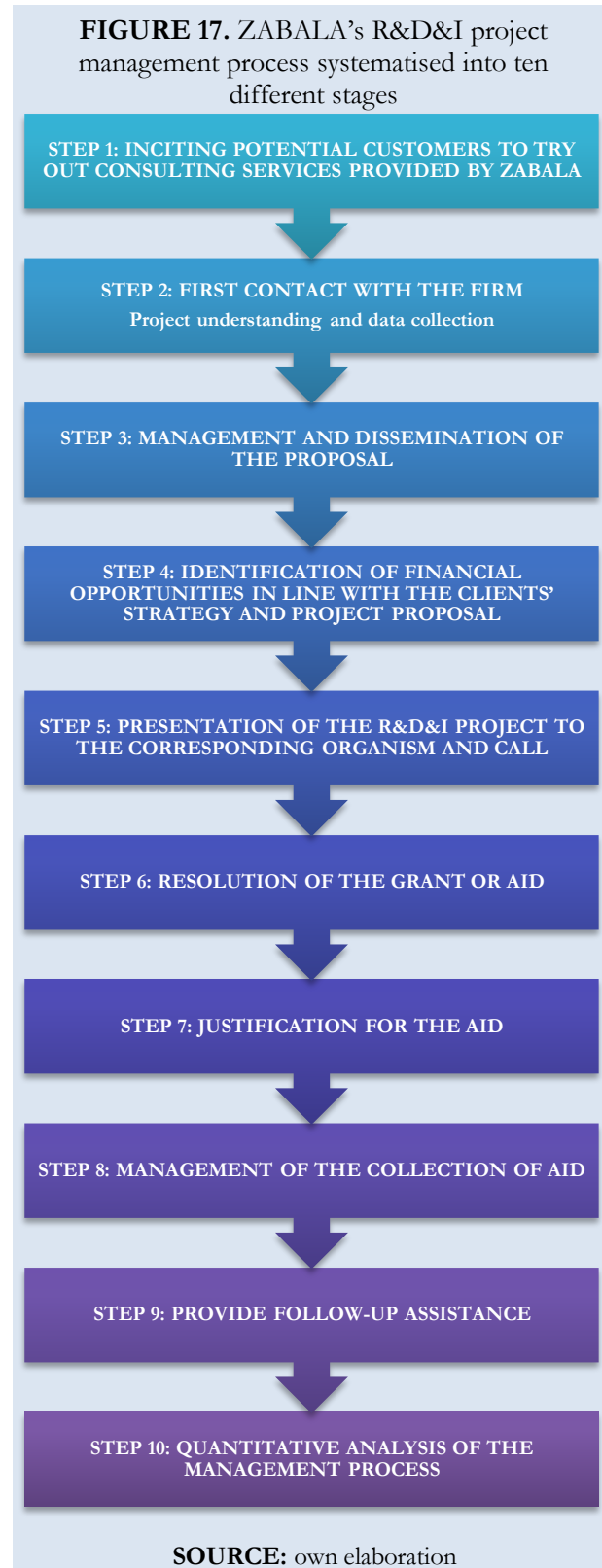
Moreover, it must be mentioned that there are some regional-level firms which are small but need to be taken into account when analysing ZABALA's competition (*see figure 16 in appendix*).

4.3. The management process of R&D&I projects in ZABALA

The intention of this section is, perhaps, to clarify which are some of the factors contributing to R&D&I projects' success or failure; this aim is intended to be achieved by doing an intensive study of ZABALA's R&D&I project management process.

As previously stated, ZABALA's core activity is focused on the analysis and management of R&D&I investments and business activities in order to help firms turn innovation into their key competitive factor. In this way, ZABALA is responsible for helping them benefit from the many R&D&I funding schemes available at regional, national and European level, as well as from tax incentives available. In spite of the many companies at state level that provide similar services (*see table 1 in appendix*), it must be acknowledged that this consultancy firm differentiates itself from competitors by delivering superior value on the R&D&I project management services provided; in fact, as it will be described in the next section, the firms' competitive advantage lies on its coordination and systematisation of the process, which has been further enhanced over the time thanks to the thirty years of experience, expertise and renown gained.

The figure on the right (*see figure 17*) shows how ZABALA's management process of R&D&I projects could be systematised and summarised. Ten different steps have been identified, but it must be taken into account that this is not an official documented procedure, but my own way of summarising the process. It is claimed that the attentiveness and accuracy with which this process is pursued rather than the actual accomplishment of all the stages of the process is what determines the successful or unsuccessful outcome of the project, especially in uncertain environments (Rochford & Rudelius, 1997).



Next section describes in more detail each of the stages that a project goes through.

STEP 1: INCITING POTENTIAL CUSTOMERS TO TRY OUT CONSULTING SERVICES PROVIDED BY ZABALA

The company has recently adopted a proactive approach rather than a reactive one when attracting customers; it was only recently that ZABALA waited until clients demanded their services. Nevertheless, the firm has radically changed its attitude and now, they have several ways in order to entice clients:

- By means of marketing, promotion and communication actions: searching for potential customers and directly contacting with them; promoting the company on the social media (Twitter, LinkedIn, YouTube, etc.), newspapers and specialised magazines; publishing its newsletter in different languages (e.g. English), etc.
- By participating in conferences, meetings, events, etc. as organisers or guests.
- By organising training courses.

STEP 2: FIRST CONTACT WITH THE FIRM – project understanding and data collection

Firstly, as it has been previously described in *section 4.2.3.*, it must be mentioned once again that its clients are disparate; depending on the frequency with which clients are willing to develop R&D&I projects, some of them are regular clients and others sporadic. Nevertheless, its services are latent; ZABALA is always willing to give assistance to R&D&I projects whichever the services needed and regardless of the time of the year.

Considering this, the stage when the assessment services are activated can be said to be ‘inhibited’ until the client itself discloses its willingness to be helped by ZABALA on the management of a new R&D&I proposal that has in mind.

Therefore, here is when the consultancy firm finally comes into play as a big supporter. Once the client establishes contact with ZABALA or vice versa, a responsible person is assigned to the proposal. This responsible person belongs to a group of so called ‘technicians’; these people are organised in four different groups in order to ease the allocation of proposals (*see table 2 in appendix*).

It could be said that ZABALA has developed its expertise in four distinct areas:

- The ABSQ team manages projects related to the areas of *Agri-food, Biotechnology, Health* and *Chemistry*, that is why it is mainly composed by agricultural engineers.

- The TEMMA team is responsible for *Transport Energy, Materials, Environment and Smart Cities* projects, so it is mainly composed by industrial engineers.
- The TICS team is in charge of projects related to *Information and Communication Technologies*, that is why it is mainly comprised by telecommunication engineers.
- Finally, the TP team is mainly composed by industrial engineers as they manage projects related to the areas of *Industry, Processes and Products*.

Thus, the allocation of each proposal to these four groups depends on the clients' industry and the project's nature; for instance, R&D&I proposals of the pharmaceutical company CINFA are normally allocated to a member of the ABSQ team.

Likewise, within these four teams, each technician is always responsible for several clients, which are always the same. Thence, a strong and long-lasting client-technician relationship is usually built, which has many positive aspects; the easiness to track record of the firm and to give feedback more accurately, the deep understanding of the firm's resources and way to work, the development of sufficient confidence in order to trust each other as there is asymmetric information at stake, etc.

Furthermore, after a client shows its willingness to develop a proposal and gets in contact with ZABALA, technicians usually take a close approach and visit the client's facilities in order to collect the maximum data possible. They are responsible for conducting an exhaustive study of the available workforce, financial resources, infrastructure, the firm's culture, etc. Nonetheless, the most important thing is that they understand the R&D&I proposal that the company wants to turn into reality.

Regarding the nature of the proposals managed, it must be mentioned that ZABALA does not only process R&D&I projects; nonetheless, according to the statistics compiled from 2015 (*see figure 18 in appendix*), most of the projects managed by the firm are related to these activities – more or less the 80% of the total of the projects processed. The rationale behind this high rate is that these projects need specific technical, finance and tax assessment, as once justified their nature in the proper way, companies can obtain subsidies and tax reliefs – a measure of Public Authorities in order to foster R&D&I activities. On the other hand, consultancy services are also provided to companies willing to be assessed with regard to investment projects (10%), energy efficiency projects (5%) and environmental projects (5%). Nevertheless, these activities occupy less than the 7% of the

time of the employees in ZABALA, so they will be considered redundant for the present case study.

Likewise, all these kind of projects can be individually or cooperatively managed, depending on the nature of the proposal. For instance, one day a bus manufacturer proposed to develop an electric bus, and it decided to cooperate with a company that was proficient in electrical installations in order to take advantage of its expertise.

Nevertheless, it must be acknowledged that cooperation is not the same as collaboration; while cooperative projects are rarer, almost all the companies collaborate with external entities (i.e. technological centres, universities, or other kind of organisms), since it is usually an indispensable requirement in order to obtain funding from some Public Authorities (e.g. CDTI, European Commission's H2020 plan, etc.). For example, the bus manufacturing company from the previous paragraph could collaborate with a Technology and Business Intelligence Centre in order to further study the electrical-mechanical connection of the new electric bus, but this last company would not bear any risk for the project development at all.

All in all, even if this step may seem quite easy to manage, many technicians allege that it is quite 'bumpy'. Some of them claim that the data provided by the firms are too few and ambiguous; on the one hand, sometimes not even the clients themselves are able to fully understand the projects they plan to implement, so they are not able to communicate to the technicians in a clear and concise way what their proposals consist in. Thus, technicians can find themselves in a situation where the company has just a blast of ideas, kind of a project without a defined structure based on a brainstorm of ideas, and as a consequence, he or she needs to contribute giving clarity and coherence to the project. On the other hand, when the clients have not done the necessary research in advance (e.g. estimated volume of sales), technicians need to make their own studies and infer data regarding the estimated initial budgets of the proposals.

Thence, considering all these facts, it could be said that the time invested on the collection of information varies a lot; it all depends on the willingness of the company to provide information, their enthusiasm to forge ahead the project and the thoroughness with which the potential project has been studied.

STEP 3: MANAGEMENT AND DISSEMINATION OF THE PROPOSAL

Once all the information collected, the technician needs to arrange it in a way that everyone can understand it. At this stage, ZABALA is responsible for writing a business plan or a technical report of the project in order to prove its feasibility.

Before describing the tasks executed at this stage, it must be acknowledged that ZABALA's competitive advantage lies on the activities performed at this phase. That is probably why this step is meant to be the most difficult part of the entire management process. In fact, the consultancy firm refuses to act as a simple managing body, but as a *'partner'* who provides added value to the proposals originated from the external clients.

Therefore, the experience and expertise of ZABALA's employees can be used in different ways to further disseminate and manage the proposals; on the one hand, other studies may be conducted in order to make further suggestions. On the other hand, especially in cooperative projects, clients could take advantage of ZABALA's extensive contact network in order to play the role of a go-between; as the consultancy firm has a big customer portfolio, clients could find a suitable firm, organism or institution that would be willing to form a partnership when necessary. Even ZABALA itself has been more than once partner of its own clients in several proposals.

Thus, once all the information arranged, the technician starts writing the technical report of the R&D&I project. The approach that ZABALA follows when writing a technical report is answering to the following five questions (*see table 3 in appendix*): what (general objective), what for (specific objectives), how (operative objectives), when (timetable or schedule) and how much (budget). If any of these questions have no answer, the project will not be a project, but just an idea. It must be acknowledged that ZABALA has at its disposal several templates that provide a general structure of the proposals needed to write.

STEP 4: IDENTIFICATION OF FINANCIAL OPORTUNITIES IN LINE WITH THE CLIENTS' STRATEGY AND PROJECT PROPOSAL

Moreover, the technician responsible for each project proposal is liable for identifying the possible ways of obtaining additional funding for the project; ZABALA is widely known for being proficient at seeking for eligible calls where financial assistance may be given to R&D&I based projects. Therefore, technicians must always be up to date with the available calls at regional, state and international level. These financial opportunities can be provided

in form of non-repayable grants, loans with lower interest rates than what the client would get if resorted to the bank, partly-reimbursable loans and other financial instruments.

In order to facilitate the flow of information of the possible financial opportunities, for each R&D&I subsidy call, there is a superior responsible in charge of sending all the information by email to all the technicians. Thus, not all of them need to read the BOE every day, but just the responsible person for the call and at the same time, he or she is responsible for keeping posted everyone else. This information is also posted on ZABALA's internal gateway.

These are some of the main organisms that launch calls for subsidies to R&D&I projects: CDTI (Spain), SPRI (Basque Country), Government of Navarre (Navarre), Invest in Spain (Spain), Government of La Rioja (La Rioja), ENISA (Spain), Autonomous Community of Valencia (Valencia), etc. For each of the calls of these entities, there is thus a responsible technician behind to whom any question can be asked (deadlines, reporting format, possible incidences, corrective actions, etc.).

STEP 5: PRESENTATION OF THE R&D&I PROJECT TO THE CORRESPONDING ORGANISM AND CALL

At this stage, several groups of people start working concurrently. Firstly, regarding the technicians, their duties are not limited to the ones explained in the previous step; in fact, they are the only ones that have direct contact with the client, so they must act as intermediaries between the client and the other departments (i.e. the finance and the administrative departments).

Firstly, with regard to the finance department, their function at this stage is more or less arduous depending on the call to which the project is meant to be presented. In general terms, it could be said that they are liable for two different tasks; for all the calls, they need to manage and supervise all the financial aspects of the presented R&D&I projects' technical report, and on the other hand, they need to conduct economic viability studies for the calls that necessarily require it (i.e. ENISA calls).

Thence, first of all, regarding the task of giving financial assessment on the technical report, ZABALA's workers are organised systematically in the following way; each of the four teams (TEMMA, ABSQ, TICS, TP) have their own financier assigned. Thus, every time one of the technicians has a question about a financial aspect of their project (i.e. how to

distribute amortisation expenses of newly acquired equipment under a leasing agreement), they need to get in contact with their corresponding financier.

Secondly, concerning the studies of economic viability, the financiers help technicians to present attractive financial statements in order to make sure that the client will get the necessary subsidy in order to fund the R&D&I project they are working on.

Finally, concerning the administrative department, it is liable for preparing all the necessary documents and sending them together with the written technical report of the project. This step seems quite simple, but the administrative burden is huge. Depending on the call, authorities require to present documentation such as all the partners' authorities, pro-forma invoices, budget estimations, curriculums of the project promoters, market studies, etc.

There is a responsible person within the department in charge of assigning each proposal to one of the ten employees in Administration. The allocation is made irrespectively, as everyone must know the bases of each call and how to prepare all the documents in order to be sent. In addition, the technician and the administrative working over the same proposal need to work together to solve the possible questions they may have or in order to ask for the missing documents to the client.

Furthermore, it is said that this step may be one of the most tedious ones together with step six (as it will be seen afterwards), as many calculations and other kind of laborious tasks must be done; each call follows different instructions, but there are some basic compulsory things that must be done regardless of the aid applied for.

On the one hand, some calculations must be made for the initial estimation of the project budget. ZABALA has standardised EXCEL templates in order to organise these estimations in a clear way (not explained for confidentiality reasons). The calculations are repeated as many times as years is expected to last the project, and they can be classified in the following way:

- *Estimation of the yearly cost of the amortization of the used equipment which is allocated to the project's budget:* the technicians must estimate a reasonable amount as part of the cost of the decreased value of the assets used over the time that lasts the project.
- *Estimation of the yearly cost of personnel charged to the project's budget:* technicians must estimate the approximate labour cost of the employees expected to work on the project.

- *Estimation of the cost of external collaboration agreements:* an estimation of the cost of subcontracting the services of innovation and research centres (i.e. universities, technological institutes, etc.)
- *Overheads charged to the project:* the company needs to send information related to its balance sheet, more specifically, information related to the 62 and 64 accounts of the Spanish General Accounting Plan in order to charge part of the overheads to the project. Some of the accounts from the general ledger asked are the following ones: *622-Repairs and maintenance, 628-Supplies, 629-Other expenses (travelling expenses, office expenses, etc.), 642-Contributions to the Social Security by the employer.* The maximum theoretical percentage that can be charged to the project is normally the 25% of the total overheads of the firm.
- *Other costs:* for instance, audit costs, subsistence allowances, transportation costs, etc. are included in here.

On the other hand, once all the estimations made, the administrative department needs to present all the calculations done on the EXCEL template into the format requested, either telematically, in paper, or in both formats. As this can be considered a time-consuming and error-prone activity, once finished, technicians must revise all the work done.

All in all, these tasks need a high level of coordination between the client, technician, administrative department and finance department. That is why ZABALA's matrix structure could not be more appropriate; according to the Hanover Research (2013), in this structure the information flow between projects and departments is increased as a consequence of the high interpersonal communication. In addition, other authors claim (Usmani, 2012) that companies with matrix structures also benefit from more efficient and faster decision-making as employees are well-informed and better situated to address problems as they arise. Notwithstanding the mentioned advantages of the matrix structure, experts argue that "dual accountability can make reporting relationships confusing" up to the point that responsibilities can be blurred, causing conflict between departments when a problem arises (Hanover Research, 2013, p. 9).

STEP 6: RESOLUTION OF THE GRANT OR AID

The organism that is managing the subsidy program can provide a positive or negative resolution within three and twelve months after having presented the project to the call,

depending on the line of aid and the nature of the organism that manages the process (regional, state or European institution).

On the one hand, in case of a negative resolution, ZABALA implements a review procedure for deemed refusal within one or two months following notification of the refusal (depending again on the bases of the call). Sometimes the organism responsible for the call considers allowing the request to be modified by a given deadline, before it is refused altogether. Nonetheless, other times companies' request to subsidise their R&D&I projects are completely refused, and therefore, they need to readjust their initial estimated budgets in order to consider whether they should move forward with the project proposal or not.

On the other hand, in case of a positive resolution, clients go ahead with the planned project and start conducting activities following guidelines specified on the written technical report.

STEP 7: JUSTIFICATION FOR THE AID

As mentioned in the previous section, once the client is notified that the project has been accepted to be subsidised, it is executed as planned on the technical report.

Normally, it is necessary to fully justify the assistance provided before receiving the financial aid; thus, the client needs to use its own resources in order to fund the expenses incurred during the project (the machines bought, salaries and wages, external collaboration agreements, etc.). Nevertheless, some organisms may decide to grant part or the entire aid for anytime during the lifetime of the project; for instance, the Government of Navarra usually grants the funding for the project as soon as the R&D&I proposal is presented, whereas CDTI only provides the 10% of the subsidy in advance, having to wait until the end of the project's lifetime in order to receive the rest of the money. The only condition imposed by all the authorities is that the money received can only contribute to financing eligible investment costs.

Moreover, when the project lifetime is quite long, in order to make the project better manageable, either the client itself or the authorities managing the subsidy can decide to split the project into constituent phases (Crawford, 1991). Therefore, different milestones are normally defined, facilitating the justification of the expenses incurred in the project. In fact, they are useful in order to manage the project work effort, monitor results, and report meaningful status to project stakeholders, as they split the project lifetime in different

phases. Nevertheless, from a pragmatic perspective, it is more difficult to define what a milestone may be, as it depends on project circumstances: for instance, it could be the completion of any highly significant task, or achieving a specific "percentage complete" for any given amount of work, or the usage of a specific amount of funding, or the passage of a specific amount of time, etc.

Therefore, for each milestone, the technicians and the administrative department must work together in order to present the necessary documentation and make the corresponding calculations to justify all the eligible expenses incurred.

First of all, the calculations at stage five – presentation of the R&D&I project to the corresponding organism and call – must be repeated, but this time, with the real costs incurred on the corresponding milestone instead of estimating them. In order to do this, the client must provide all the invoices and proofs of payment (where the traceability of the payment can be clearly seen) in order to allocate these costs to the justified budget of the project.

Just the methodology of the calculation of the *actual yearly cost of personnel charged to the project budget* will be explained on this section, as it is quite wearisome; firstly, the company needs to send the following documents:

- The list of the employees who have participated in the project with their respective studies and position.
- The hours that each employee has devoted to activities specific to the project.
- The deduction certificates of the workforce of the company in order to see the gross salary of the employees allocated to the project. This information is clearly seen on the *10T* or *190 certificates* of the company.
- Their monthly payments in case the estimations are being made before the year-end and the company does not have the deduction certificates available yet.
- The *TC2* or *Lagun Aro* (when employees are cooperative associates) certificates of the company's workforce in order to identify the monthly Social Security contributions made by the employer for the employees participating in the project.
- The labour agreement of the company in order to see the effective hours worked by employee per year. Nevertheless, when workers are granted allowances such as the reduction of hours worked for legal guardianship, the actual hours worked should be requested to the company.

After the company sends all this information, the administrative department organises it in different PDF documents; a screening must be done as clients usually send all the documents corresponding to its entire workforce, without regarding if the information corresponds just to the employees working on that specific project or not. Once all the information is available, ZABALA completes a template that automatically calculates the hourly cost of each employee participating on the project (not explained for confidentiality reasons). In this way, multiplying the calculated hourly cost by the actual hours devoted to the project for each of the employees, the real cost of personnel is calculated.

Even though this stage might appear quite simple, problems usually arise because of the subjectivity with which the hourly cost can be calculated; for instance, auditors argue whether subsistence allowances and payments in kind should be included as part of the gross salary of a worker. Moreover, workers in the administrative department are faced with other similar quandaries when employees working on the project have different kinds of allowances that reduce the number of effective hours worked per year, or they have outstanding wages to be paid, or payments of compensations that alter the calculus of the hourly cost of employees, etc.

Thereafter, once all the budget lines determined (i.e. real cost of personnel, amortisation, collaboration agreements, overheads and other costs), it is quite relevant that technicians make sure that the justified budget looks similar to the initial estimated budget. If this would not be the case, the client would have to think about making small changes, as depending on the dissimilarity gap, the responsible organism for the call could opt to decline the application of the subsidy.

Subsequently, once all these calculations done, several documents must be prepared for the auditor. Even if they may vary from call to call, these are the most common requested documents; the revised dossier of the technical and economic feasibility of the project, admission of promoters, invoices and proof of payments where traceability of payments can be demonstrated, job positions created by the implementation of the project, possible labour agreements, etc. Moreover, the firm also needs to obtain the certificates that prove being up to day with the payments at Social Security and the Finance Ministry.

Afterwards, the external auditor must supervise everything. The process cannot move forward without his or her permission, so if the auditor does not agree with any calculation or document, he or she gets in contact with ZABALA in order to discuss it.

Nonetheless, even if it is not the most common situation, it must be acknowledged that not all the organisms that grant subsidies require companies to audit the documents presented, thus, sometimes the process moves forward without an external auditor's opinion.

Subsequently, as soon as the auditor agrees with the calculus of the justified budget for the project and signs all the documents, the request of the subsidy can be fully justified. Thus, ZABALA proceeds to process all the documents to the corresponding responsible organism as requested by the call; either telematically through an electronic platform, in paper version, or both.

STEP 8: MANAGEMENT OF THE COLLECTION OF AID

At this stage, ZABALA tries to minimize the administrative workload, and facilitates the collection of the aid, as in some situations, this process can be quite uncertain. In fact, the client could find itself in different situations:

- *The case where the justified budget is less than the initial estimated budget:* in this case, two different sub-situations could be faced. On the one hand, if the client had received the entire subsidy in advance, he would need to give back the part of the subsidy that had not been used. On the other hand, if the client had still left another milestone to justify thereafter, it should be thought about appealing to the competent authority managing the subsidy; in this way, the client would need to explain how he plans to re-equilibrate the justified budget in order to finally add-up a similar amount to the initial estimated budget. Perhaps, it must be taken into account that the project could have an accelerated path of expenses during its lifetime. If the client would not expound a reasonable cause for that accelerated trend, the corresponding authority could deny part of the subsidy that had not been used.
- *The case where the justified budget is more than the initial estimated budget:* the client would not have the right to receive more money than the expected to be granted at the beginning of the process. Nevertheless, the company would collect the part of the aid not received thus far.

STEP 9: PROVIDE FOLLOW-UP ASSISTANCE

Once the aid is collected, the dossier of the project undergoes a follow-up phase where the provider of the financial help can request any additional document that considers relevant for the justification of the project. This avoids a company to request subsidies for other

purposes other than the ones initially claimed. At this stage, ZABALA facilitates the preparation and submission of additional financial and technical reports to the corresponding institution.

STEP 10: QUANTITATIVE ANALYSIS OF THE MANAGEMENT PROCESS

Finally, the financial department gives report to the client about the total funding received and the R&D&I related tax incentives obtained on the process. In fact, firms are entitled to deduct part of their expenses if properly reported to the corresponding organism when settling their corporate income tax. Therefore, the financial department is liable for calculating the following incentives for each company and processing the necessary certificates that prove that these calculations are right:

- **R&D&I tax incentives:** obtained as a consequence of having conducted R&D or innovation activities, or less frequently, activities related to environmental investments.
- **Bonuses of the business quotas for Social Security:** bonuses of the business quotas for Social Security on human resources allocated to R&D and innovation activities.
- **'Patent box' tax incentives:** reduction in firms' tax burden because of the transfer of Intellectual Property Rights.

Tax incentives and business quotas for Social Security

Firstly, regarding the first two kinds of tax incentives, they are fiscal aids that firms receive as a consequence of conducting activities related to R&D or innovation. The Spanish Government is meant to provide them in order to incentivise the development of R&D&I projects (especially R&D ones). In this way, tax deductions are obtained and the corporate income tax that the company needs to pay to the Finance Ministry is significantly reduced; therefore, it is claimed that this kind of tax relief is a primary way of funding R&D&I activities (MINECO, 2016). All kinds of companies and projects are subject to use this incentive, without exclusion of any technological area.

However, for entitlement to this benefit, these are the necessary requirements:

- The entity needs to have an "argued report" at hand which certifies and assesses two things: the R&D or innovation (one of the two) **nature** of the project and the incurred expenses and investments on the conducted projects which will determine the **deductive basis**.

- The amount of the applied deductions should be allocated to expenses or investments related to R&D&I within the following 24 months.
- The average staff, or the average staff assigned to R&D&I activities should not be reduced within the following 24 months.

As the savings obtained through this tax relief can be significant, the Finance Ministry undertakes random inspections in order to ensure that the requirements stated in advance are fulfilled. The time-period that this organism has for conducting an inspection is of four years after the settlement of the corporation income tax. Thus, ZABALA is liable for ensuring the correct calculus of the eligible allowance and that its clients properly meet all the three above requirements.

Concerning the calculation of the allowance, it must be taken into account that there are three different applicable legislations; the State law, the law from Navarre and the law from the Basque Country (*see table 4 in appendix*).

Likewise, tax allowances are different depending on the nature of the project; either R&D or innovation (*for more details, see table 4 in appendix*). It must be acknowledged that even if at first sight this distinction may appear redundant, the difference in the tax break is significant. Thus, most of the companies would like to allege that their projects have R&D nature, as the entailed tax relief is much higher. Nevertheless, the tax inspectors are the ones who have the last word and further substantiate the certification of the nature of the project. Hence, companies need to be careful with this fact, since if they allege that their projects have R&D nature without a strong backing, and they finally prove to be innovation-natured, the firm would need to pay money back to the Finance Ministry, including default interests.

In light of the above, the firms can decide to calculate their corresponding tax allowances by different approaches, each of them entailing a higher or lower risks (*see figure 19 in appendix*). Overall, there are four different approaches to tax relief calculation; *the self-assessment system*, *the consultation to the Finance Ministry* (either the binding consultation or the agreed prior assessment), *the certificate obtained through the Ministry of Economy* and *the argued report from some Organisms* (i.e. CDTI). Each of these four means help firms determine both, the nature of the project and the deductible base of the allowance.

Firstly, regarding the *self-assessment system*, it is an approach that entails a lot of risk since the firm itself calculates the corresponding tax relief at its peril. Using this approach, firms pay

taxes according to their criterions, and therefore, if a tax inspection is conducted, in case of inconsistencies between the firm's opinion and the inspector's one, the company is bound to pay high interests for arrears as it does not have a binding certificate to justify the calculations of the allowances. Firms usually opt for this approach when the project's budget is low and it is not worth contracting certifiers, as their cost add-up to more or less 4,500€.

On the other hand, the approach of *consultation to the Finance Ministry* does not entail any risk, as companies ask for binding agreements – either once the project conducted (*2a in figure 19 in appendix*) or before having started the project itself (*2b in figure 19 in appendix*). These binding agreements help to make sure that the firm has a complete backing in case the tax inspectors disagrees either with the nature of the project – R&D or innovation – or with the amount of tax relief calculated.

Thirdly, regarding the *certificates issued by the Ministry of Economy (MINECO)*, it is an arduous approach but it helps companies ensure legal certainty by the binding certificates obtained. These certificates allege both, the nature of the project (either R&D or innovation) and the deductible amount arising from the project. Nevertheless, before the Ministry of Economy issues this certificate, it is firstly required that an independent entity accredited by the National Accreditation Agency (ENAC) writes a certification report. These independent entities are also known as certifiers; as they are naturally private entities, in order to keep track of their activities, they must be all supervised by the public entity called ENAC.

Most of the times, the report written by the certifiers concur with the opinion issued by the Ministry of Economy, but if it is not the case, administrative and judicial processes can be activated. Regarding the appealing process, firstly, an administrative appeal can be lodged within one month, and then, if a negative resolution is again received from MINECO in the period of 3 months, a contentious judicial appeal can be lodged within 6 months. ZABALA is, in fact, liable for managing all this process.

In addition, it must be acknowledged that this approach works a little bit different in Navarre and the Basque Country, as both autonomous communities have their own regulation in matters of Economy. On the one hand, for firms located in Navarre, the process is shortened since it is not required that a certifier issues an argued report; companies directly resort to the Government of Navarre in order to ask for a binding certificate. This certificate can be asked before or after a R&D&I project is conducted; if it is asked in advance, the authorised taxable amount will be the estimated budget, whereas if

it is asked after the project execution, the taxable amount will be based on the real costs of the project. In any case, the Government will issue a resolution within 6 months free of cost. On the other hand, concerning the firms from the Basque Country, the approach works in a similar way to that from Navarre; companies need to ask for binding assessments directly to the SPRI (R&D nature projects) or BEAZ (innovation projects from Vizcaya) free of cost at the end of the year. Therefore, certificates are normally based on real costs of the project. Nevertheless, for projects whose budgets exceed a threshold of 1.000.000€, they need to be processed through certifiers in order to obtain an additional argued report as a backing.

Finally, regarding *the argued reports issued by some specific organisms*, accounting the tax by this approach entails a small risk that may be made up for the small work burden entailed. Some funding providers mentioned before (i.e. CDTI, OEPM or IDEA) can issue argued reports – if the clients ask so – once all the data from the R&D&I projects is provided. Tax inspectors often have no problem with backing the tax relief by these reports, nevertheless, it is not the most secure way to pay taxes; these organisms issue certificates based on the estimated budget instead of issuing it based on the real expenses as certifiers in the previous approach do.

Before plunging into the next kind of tax incentive, the issue of the taxable amount of the tax relief should be clarified. Firstly, it must be taken into account that the corporate income tax is normally paid by 25th July for the majority of firms in Spain, as they normally follow the calendar year (1st January - 31st December). Therefore, by that time, the real expenses incurred in R&D&I projects for the signed statements of accounts are already known. Companies asking for binding certificates to the corresponding Organisms after the year-end do not have any problem, as they will calculate the corresponding tax relief based on the approved amount for the project, which is at the same time based on real costs. However, it must be mentioned that this amount is always lower than the real cost of the project, as expenses such as audit costs or subsistence allowances are never included for determining the taxable amount. The problem arises when companies decide to certify their projects before the year-end; in this case, the taxable amount would be based on the estimated budget (subtracting audit costs and other non-eligible costs) rather than in the real expenses incurred. Therefore, firms could find themselves with the dilemma of which deductible basis to use. Two different scenarios can be identified:

- **Real expenses > Estimated expenses** (theoretical certificated amount) → in this case, the tax relief should be calculated over the certificated amount, which is based on the estimated budget. If there was a considerable difference between these two amounts, the company could always opt to re-process documents and obtain a new certificate based on the real costs of the project.
- **Real expenses < Estimated expenses** (theoretical certificated amount) → in this case, the corresponding tax relief should be calculated over the real costs of the project. Nevertheless, if the total real cost of the project at the end of all its milestones is lower than the budget approved on the initial obtained certificate (based in estimated costs), the company would be able to increase the taxable amount until the limit of the approved budget.

Thus, to sum up, it could be said that ZABALA just takes part on this process when its clients decide to calculate their corresponding tax relief by approaches one and three. In both cases, for each company, all the data from the different R&D&I projects conducted within the fiscal year are collected. Then, ZABALA fulfils a template (not explained for confidentiality reasons) in order to calculate the corresponding tax relief. Additionally, as mentioned before, in case of inconsistencies between the right of deduction and the amount actually deduced by the firm when an inspection is conducted – e.g. because of contradictions regarding the nature of the projects, – ZABALA helps to manage the appealing processes.

Patent box' tax incentives

It is a kind of fiscal adjustment that consists on the possibility of deducting 60% of the expenses coming from agreements to cede the use (neither the sale nor the transfer of ownership is valid) of certain intangible assets developed by that firm itself (i.e. patents, trademarks, etc.).

Settlement structure

Even if the calculus of the previously seen tax incentives may appear cumbersome, they can substantially reduce the yearly tax paid by the firm. Therefore, *figure 20 in appendix* indicates where the previously seen tax incentives fit on the settlement process of the corporate income tax.

4.4. Quantitative assessment of the efficiency of the process: internal statistics

On the previous section, it has been qualitatively proved that ZABALA's management process is effective as well as efficient. Nevertheless, this section will provide insight of quantitative results of the company.

On the one hand, it must be acknowledged that the evolution of the number of projects managed by the firm has increased over the time (*see figure 21 in appendix*). Therefore, it can be inferred that the clients are satisfied with the services provided, and more and more firms opt to delegate on ZABALA the management of their R&D&I projects.

Likewise, it can be also mentioned that the firm has experienced an increase on the number of projects steered at European level (*see figure 21 in appendix*), reflecting the scope-expansion of the firm and its effectiveness on the area. This argument is further supported by a press release published at *Diario de Navarra* on 9th November 2015; it alleged that ZABALA was ranked as the eighth Spanish firm raising borrowings for R&D&I projects on the seventh Framework Programme of the European Union (7PM), and the first SME as reflected on the analysis of Spain's contribution on the EU's Seventh Framework R&D Programme (2007-2013) according to an study conducted by CDTI (*see table 5 in appendix*). Actually, ZABALA got a return on investment equivalent to 500 millions of euros for its clients, which supposes the 1% of the total budget allocated on the program. Likewise, according to the report from CDTI, ZABALA proved to be more effective than other organisms, since the funding-approval-rate of the presented projects was around 34%, whereas the average was of 20%.

On the other hand, regarding national-level subsidy calls, ZABALA also proves to be more effective on the process of R&D&I project management compared to its peers; for instance, INNPACTO-RETOS is a subsidy call launched yearly which is managed by the Finance Ministry of Spain (MINECO) for R&D&I projects (*see figure 22 in appendix*). On this call, for the years 2010-2015, ZABALA achieved an average success of 58.53%, while the general success rate was around 39.12% (*see table 6 in appendix*).

Finally, concerning the regional-level subsidy calls, ZABALA demonstrates even a higher efficiency than on the previous areas; for example, its average approval rating among the R&D&I projects managed on ETORGAI – a call directed by the Government of the Basque Country– is meant to be somewhere around the 87%, while the general approval funding-rate on the call is around 69% (*see table 7 in appendix*). Moreover, related to this, it

must be mentioned that 19% of the total funds of the call are normally allocated to ZABALA (*see figure 23 in appendix*), a fact that makes even more evident the efficiency with which the company manages the R&D&I management process of its clients.

All in all, outsourcing the management of R&D&I projects on specialised consulting firms such as ZABALA may seem really attractive in Spain, as the benefits arising from the company's experience, renown and expertise have just proved to result in a more efficient performance than when companies opt to steer the process themselves.

4.5. Limitations, reliability and internal validity of the case study

In this part of the paper, the *internal validity* of the research methodology will be discussed. Jackson (2011) defines this concept as follows: how accurately the data and the conclusions drawn from the data represent what really happened – with respect to this case study that has been described on the previous section.

On the one hand, it must be acknowledged that the overall research may be biased and misleading as the observer – me myself –, I have been personally involved on the management process of the case study evaluated. Thus, I might have described the R&D&I project management process in an 'ideal' way, even if many times I had to face unexpected contingencies on the way.

Furthermore, the fact that I have been working for the company for 5 months makes even more dubious the general robustness of the document, since it is probable that I have developed affective relationships with employees of the firm. Therefore, the affection towards the company may have biased the analysis, and shortcomings might have been overlooked unintentionally (Guba & Lincoln, 1981).

To this we should add that qualitative approaches seem to give more room to unintended subjectivity and arbitrary judgments than quantitative ones, especially if the observer is involved on the process (Diamond, 1996). For instance, Flyvbjerg (2006) claims that the case study approach becomes of doubtful scientific value due to the author's tendency to confirm preconceived notions.

4.6. Ethics

Finally, ethics is a discipline that always needs to be taken into account when conducting research (Resnik, Tyler, Black & Kissling, 2015), especially when confidential information is

disclosed. That is why this section will highlight the efforts and steps that have been taken to ensure a moral and non-harmful research.

First of all, the express consent of the executive board was obtained in order to write the end-of-degree project about my internship at ZABALA Innovation Consulting, S.A. Secondly, an ethical approval form had to be completed and signed off by the Public University of Navarre claiming that the present paper would not be accessible to the public in 5 years. Likewise, when information provided by internal workers was exposed on the present paper, it was assured that their names would remain absolutely confidential. Finally, it must also be acknowledged that all the collected data from the company have been stored on a password-protected computer.

5. KEY FINDINGS

Thence, bearing in mind the limited scope and ethical considerations of this research, in this section some common insights have been distilled, which have been drawn from the empirical research and data analysis conducted in the previous section.

Firstly, according to the analysed studies, it has been inferred that the high failure rate of R&D&I projects among Spanish firms is not because they lack the necessary abilities or resources. R&D&I technicians are meant to be as effective in Spain as in any other country (OECD, 2015), especially at the project planning phase. Nevertheless, subsequent phases of the R&D&I project management process (i.e. searching for funding opportunities, etc.) are many times overlooked. This should not appear surprising though, as the SME-structure of the country entails that firms are less probable to fully staff their operations due to the insufficient workforce. In this way, there is a gap within Spanish companies when having to monitor the entire process of project management once they are planned, and as a consequence, R&D&I projects fail because of this lack of surveillance.

Secondly, from the empirical research conducted, it can be also concluded that the expected outcome (either positive or negative) from R&D&I projects depend on the proposals' compatibility with the firm's resources in broad terms – e.g. management and market research skills, R&D&I and production facilities, experience with innovation projects (Maidique & Zirger, 1984; Stuart & Abetti, 1987).

Following this rationale, as the qualitative and quantitative analysis conducted demonstrates, ZABALA seems to be an effective project manager, as its performance effectiveness could be ranked above average. In fact, the competitive advantage of this firm might lay in the fact that the consultancy firm refuses to act as a simple managing body, but as a *'partner'* who provides added value to the proposals originated from the external clients. In this way, ZABALA's clients can take advantage of the firm's experience, expertise and renown in different ways. For instance, the extensive contact network that the firm has developed through the years can be useful in order to help clients find additional backing for the projects (partners, collaboration agreements, etc.). Likewise, its renown can provide extra confidence to Public Authorities in order to increase possibilities of obtaining funding for the projects. Another example could be the fact that its years of experience might be beneficial in adverse situations, as the firm would have probably managed previous similar situations before (i.e. lodging appeals).

Nonetheless, ZABALA's competitive advantage does not only lay on the added-value coming from its intangible assets; for instance, it could be mentioned that the coordination and expertise of ZABALA's employees might be a major weapon for clients, as the positive synergies created might help to lead processes in an accurate and rapid way, providing likewise additional value to projects by the conducted additional studies (e.g. economical and technical feasibility of the project). On the other hand, the company has its offices strategically located; for instance, bearing in mind the current trend towards globalisation and the increasing opportunities at international level, the office located in Brussels can be considered the 'door to Europe', as it provides clients with the access to the many European level funding opportunities. Additionally, as ZABALA has also many partnership agreements all over the world, clients can benefit from them in order to seek for opportunities abroad. Finally, it must also be mentioned that the company owns a series of tools such as its own highly reliable and secure internal gateway called *Studio*, that facilitates the systematisation and business-like management of the firm.

Finally, quantitative studies have further proved some of the benefits mentioned beforehand; for instance, as previously stated, managing R&D&I projects through ZABALA seems to be more effective than managing them through any other alternative, as its overall performance could be ranked above the average in terms of public funding obtained for the project – at regional, national and European level calls.

SUMMARY OF THE KEY BENEFITS OF ZABALA Innovation Consulting S.A.

Act as a **PARTNER** who provides **added value**, not as a simple managing body.

- 01.** Reduction of the administrative burden.
- 02.** Possibility of using the extensive contact network of the firm.
- 03.** Additional studies (e.g. economic feasibility of the project).
- 04.** Previous experience on the area.
- 05.** More possibilities of obtaining additional public funding.
- 06.** More opportunities.
E.g. The office located at Brussels is the "door to Europe".
- 07.** Systematisation and business-like management of the firm.

6. CONCLUSIONS

6.1. Summary of key findings and resulting conclusions

The overall aim of the research was to analyse the possible causes of R&D&I project management failure and to give advice on how firms could become more effective on the process.

Two main research vehicles have been employed to facilitate this study: on the one hand, the qualitative and quantitative review of the relevant literature, and on the other hand, the case study research on ZABALA.

The key conclusion of the present paper could possibly be that firms should not absolve themselves from managing R&D&I projects once they are planned, but provide a close follow-up assistance until the project is actually implemented. In fact, studies have shown that much effort is put on the planning phase, but other stages are many times overlooked.

In case the company conducting R&D&I projects is not able to closely supervise the process due to the lack of resources (i.e. few employees, no experience, no contact-network, etc.), subcontracting external R&D&I consulting firms might be a good alternative. In fact, the analysed study case has shown that companies using this kind of services are meant to show more effective results in terms of projects successfully implemented.

6.2. External validity of the document

In a previous section, the document's *internal validity* has been discussed, but little attention has been paid to the paper's *external validity*; how accurately the data and conclusions drawn from the data represent what goes on in the larger population or reality. In fact, it could be said that the findings and conclusions may accurately represent what was found in the sample studied, but may not apply to other samples.

Firstly, it must be acknowledged that the scope of this research was limited to a single case study, a single instance, making the issue of generalisability imminent (Evitt, 2007). Much can be learned from a particular case, nonetheless, when a firm is selected purposely, it might appear problematic as it is probable that the firm is not representative of the whole population (Trochim, 2006).

On the other hand, it must be also acknowledged that the literature review of the present paper has not completely clarified what innovation, and innovation management are.

Likewise, it has been assumed that some other concepts are rather clear for the reader, but because of time and content restrictions, they have not been defined (i.e. success, failure).

For instance, the concept of 'failure' has constantly been used, nevertheless, researches remain inconsistent as to what they consider 'failure' or not. Authors might introduce great subjectivity and use different scales in order to measure it (Mar, 2012). For example, would you consider the following ones R&D&I project failures?

1. The project was delivered on time but was 10% over budget.
2. The project was delivered on budget but was 10% over time.
3. The project was delivered on-time and on-budget but lacked a number of in-scope features.

Finally, it must also be mentioned that many times the concepts of research and development and innovation have been used interchangeably, but the differences between both concepts appear to be significant (MINECO, 2016).

6.3. Recommendations for future research

Some suggestions could be made in this section for future research. For instance, coming studies could look into more than one case study in order to gain better representation of the performance of R&D&I consulting firms. These additional case studies could be based on either consulting firms and/or firms steering the entire management of R&D&I projects themselves. Furthermore, it would be interesting if the analysed companies stemmed from different parts of Spain, not just Navarre – an autonomous community where R&D&I activities are intense. Likewise, a similar study could have been conducted in different countries to find out whether there are significant differences between the approach to R&D&I management. Nevertheless, as these additional studies would have been beyond the scope of the present paper, I have contemplated the possibility of extending this research in future studies.

6.4. Acquired competences

This end-of-degree project is meant to be a mechanism to apply the theoretical knowledge acquired throughout the four-years of the Bachelor in Business Studies done. By the development of this paper, I am supposed to acquire some generic and specific competencies as stated on the website of the Public University of Navarre. Nevertheless, its development has – personally – provided more than that.

On the one hand, regarding the generic competencies accomplished, it could be mentioned the aptitude to autonomously plan and organise the present paper (CG02); even if my supervisor helped me with many aspects, I had complete freedom to choose whichever topic and structure I wanted. At first glance, I must admit that the lack of continuous monitoring was daunting; nevertheless, I have developed the capacities for autonomous learning (CG17) and critical thinking (CG14).

Additionally, another problem that I had to face was that too much information was available on Internet and at the University's library. Thus, I was encouraged to find, analyse and screen the appropriate information for the present paper (CG01 and CG06). However, it must be acknowledged that this ability would not have been acquired without the help of the so-called "*Competencias informacionales*" online training provided by the BUPNA (Biblioteca de la Universidad Pública de Navarra).

Furthermore, concerning the subject-specific competencies, I have had the opportunity to explore different bibliographic databases (e.g. SABI, Web of Science, Scopus) in order to find economic information related to the present paper (CE02). However, I must mention that my position as an intern at ZABALA has allowed me to collect not just information from secondary sources, but first-hand information for great part of the empirical study as well. This encouraged me at the same time to get involved more actively on the firm, as I had to thoroughly understand the internal system of the company (CE13). Nevertheless, the aspect of managing primary data entails thereby a further risk; as I managed confidential information, I could not disregard the ethical commitment with the company when exposing it (CG15).

Notwithstanding the above, and as previously mentioned, the completion of the present end-of-degree project has not just provided me with some competencies, but some attitudes and work-routines as well.

For instance, I have realised about the importance of being up-to-date with the information, especially in the analysed field of R&D&I management, as it becomes quickly obsolete.

On the other hand, the completion of this paper requires self-discipline and the ability to balance the entailed workload with other activities; I have combined the development of the end-of-degree project with a module at the University and the already mentioned internship – where I worked 40 hours per week.

Finally, the composition of the present paper has made me aware of how broad it is the area of Business and the importance of continuing to undergo training. These four-years of university have been a good springboard to go ahead with my professional career, nonetheless, I think that there is still a long way to go.

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8. LIST OF FIGURES

FIGURE 1. Number of papers and books about innovation management over the years as searched in ScienceDirect.com.....	4
FIGURE 2. Evolution of the R&D&I expenditure between 1996 and 2014 as a percentage of the total GDP (per million people).....	7
FIGURE 3. Total internal expenses on R&D&I activities classified by sector of operation in SPAIN between 2000 and 2014.....	7
FIGURE 4. General State Budget allocated to R&D&I in SPAIN between 2000 and 2014.....	7
FIGURE 5. Evolution of the number of technicians in R&D&I activities in SPAIN between 1996 and 2013 (per million people).....	7
FIGURE 6. Evolution of workers with tertiary education as a percentage of the labour force between 2000 and 2013.....	7
FIGURE 7. R&D&I expenditure intensity (%) in SPAIN (2014).....	8
FIGURE 8. Evolution of the total internal expenses on R&D&I activities classified by autonomous community in SPAIN between 2003 and 2014.	8
FIGURE 9. Major causes for project failures according to the Bull Survey (1998).....	9
FIGURE 10. Number of active enterprises in SPAIN classified by number of employees (2014)	10
FIGURE 11. Services provided by consulting firms in SPAIN in thousands of euros between 2003 and 2009.	10
FIGURE 12. ZABALA’s service portfolio:	13
FIGURE 13. ZABALA’s offices and partners network.....	13
FIGURE 14. Evolution of the number of employees and establishment of the offices of ZABALA Innovation Consulting S.A. (2000-2016).....	15
FIGURE 15. ZABALA’s matrix structure.....	15
FIGURE 16. ZABALA’s regional-level competitors (2016)	15
FIGURE 17. ZABALA’s R&D&I project management process	16
FIGURE 18. Nature of the projects managed at ZABALA in 2015.....	18
FIGURE 19. R&D&I activities’ tax allowance calculations’ approaches	29
FIGURE 20. Tax incentives managed at ZABALA Consulting S.A. highlighted on the settlement structure of the corporate income tax.....	32
FIGURE 21. Evolution of the number of projects managed by ZABALA Innovation Consulting S.A. classified by areas (2008-2015).....	32
FIGURE 22. INNFACTO-RETOS’ general approval rate vs. approval rate of projects managed by ZABALA on the call (2010-2015).....	33
FIGURE 23. ETORGAI’s general approval rate vs. approval rate of projects managed by ZABALA on the call (2008-2015)	33

FIGURE 1. Number of papers and books about innovation management over the years as searched in ScienceDirect.com – a large database of scientific and medical research (Eveleens, 2010, p. 1)

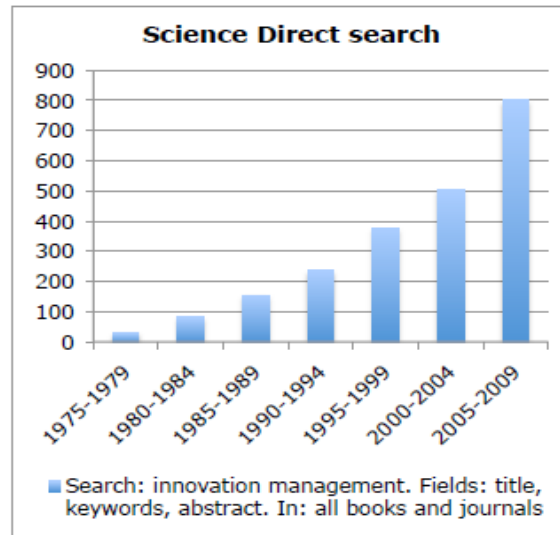
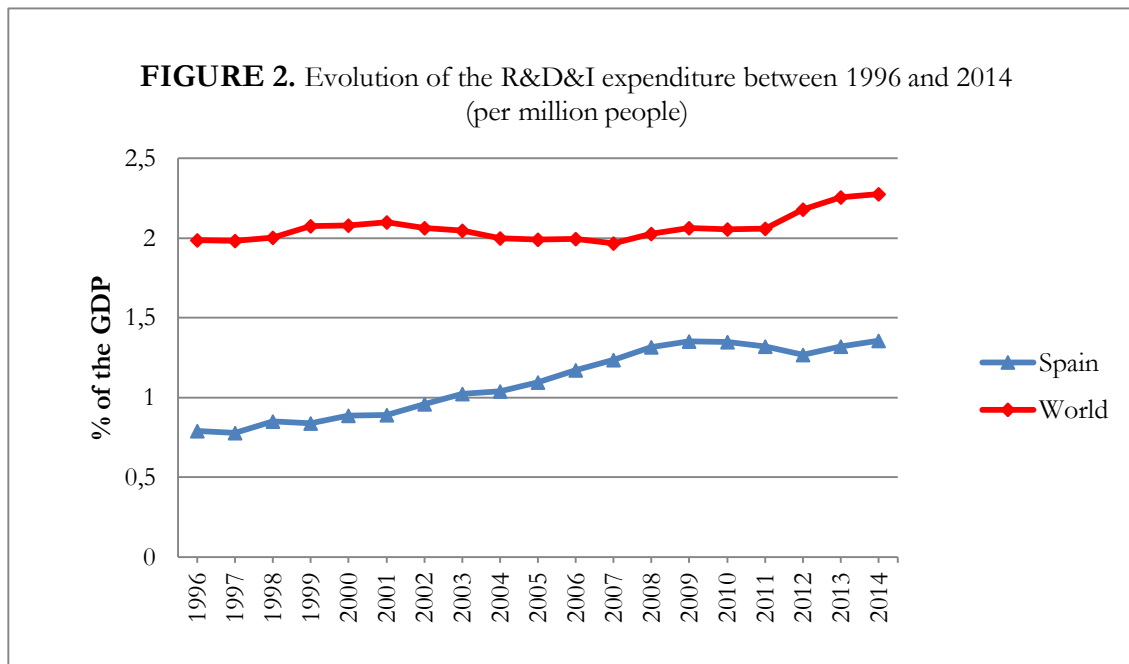
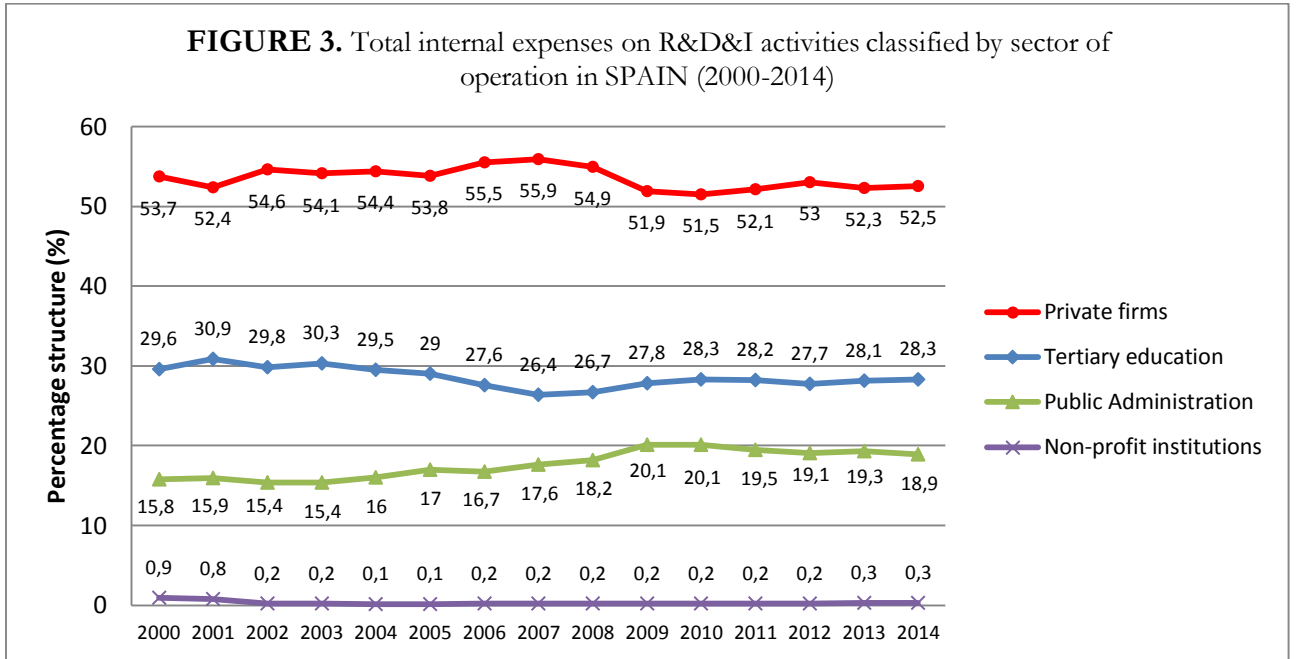


FIGURE 2. Evolution of the R&D&I expenditure between 1996 and 2014 as a percentage of the total GDP (per million people)



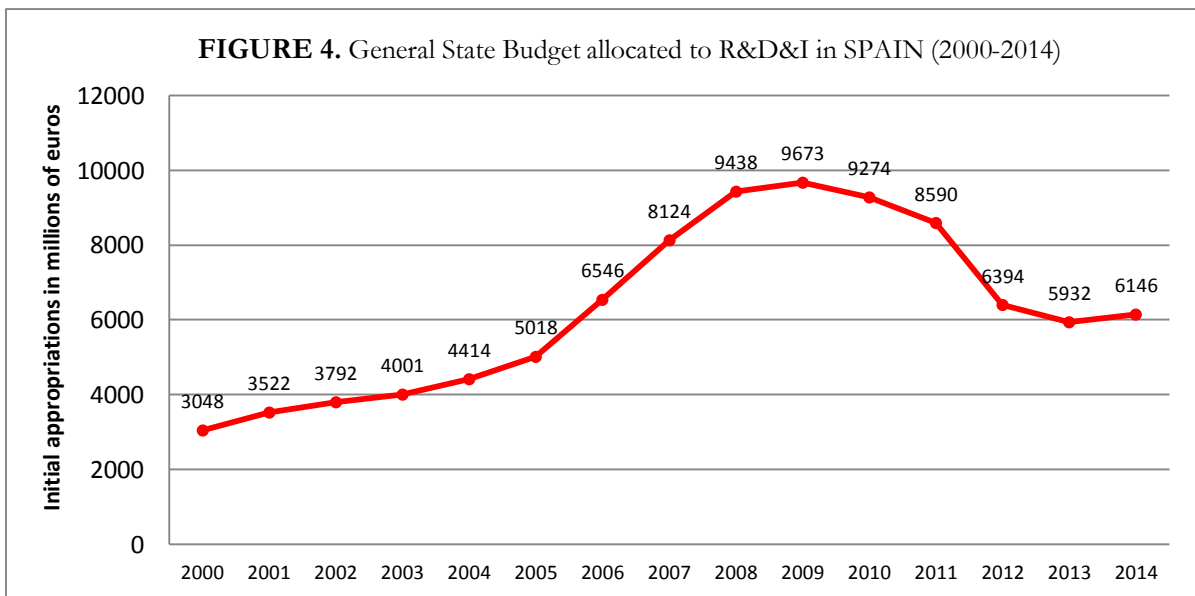
Source: own elaboration from data collected from the World Bank Institute (WBI).

FIGURE 3. Total internal expenses on R&D&I activities classified by sector of operation in SPAIN between 2000 and 2014.



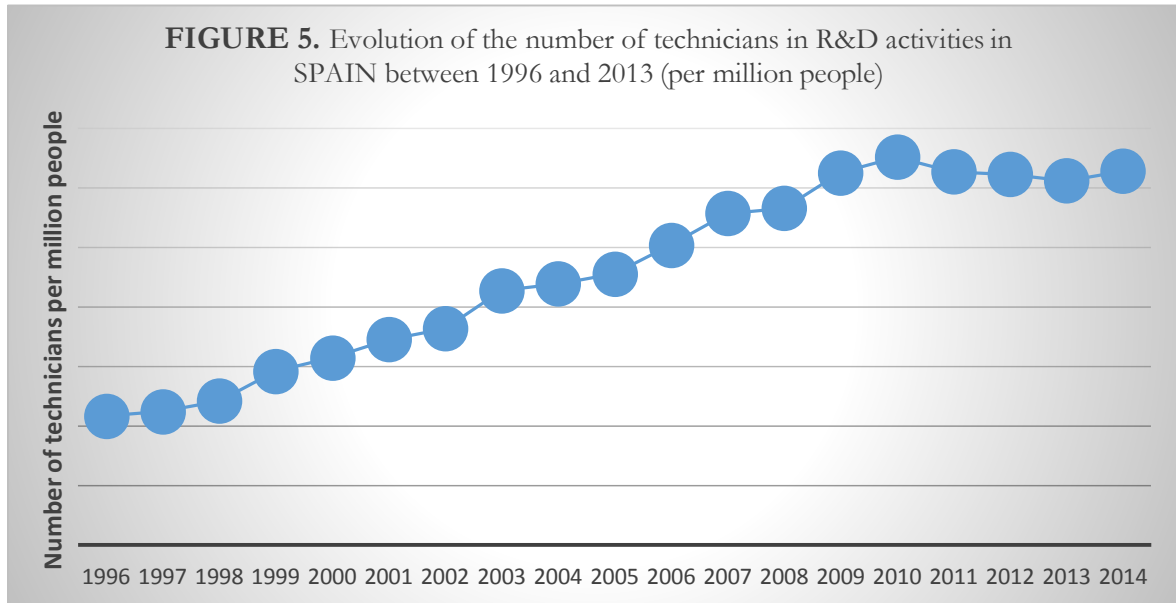
Source: own elaboration from data collected from the National Statistics Institute of Spain (INE) – “Estadísticas sobre actividades de I+D”.

FIGURE 4. General State Budget allocated to R&D&I in SPAIN between 2000 and 2014



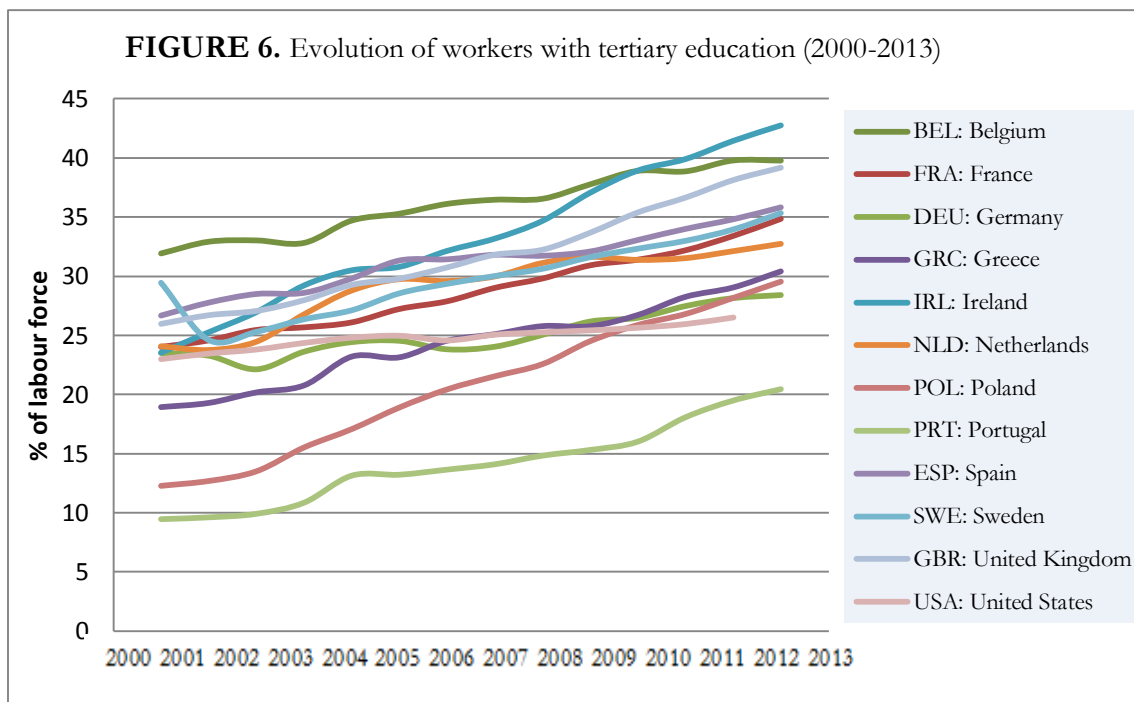
Source: own elaboration from data collected from the *Ministerio de Hacienda y Administraciones Públicas*. “Presupuestos Generales del Estado”.

FIGURE 5. Evolution of the number of technicians in R&D&I activities in SPAIN between 1996 and 2013 (per million people).



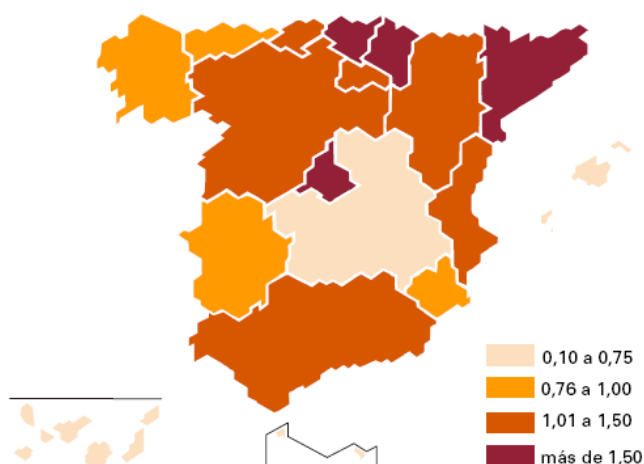
Source: own elaboration from data collected from the World Bank Institute (WBI).

FIGURE 6. Evolution of workers with tertiary education as a percentage of the labour force between 2000 and 2013 in different countries.



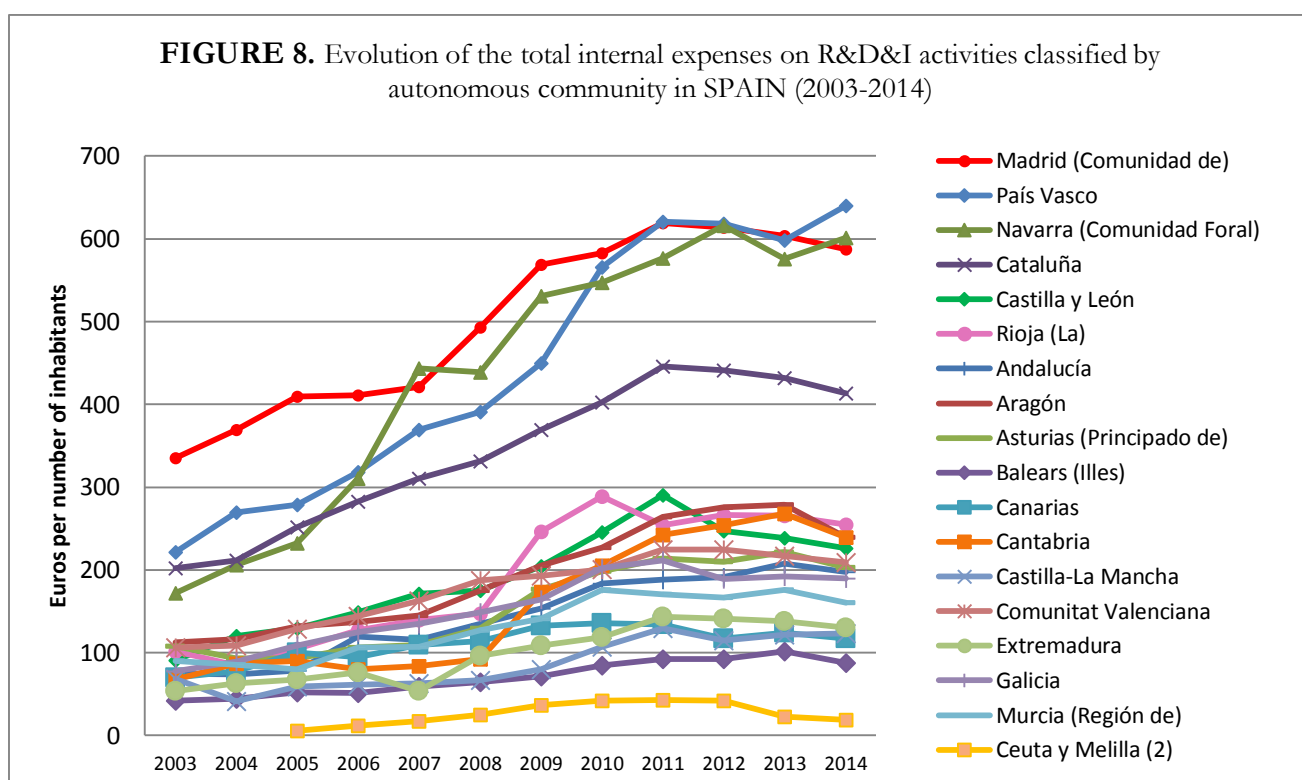
Source: own elaboration from data collected from the Organisation for Economic Cooperation and Development (OECD).

FIGURE 7. R&D&I expenditure intensity (%) in SPAIN (2014)



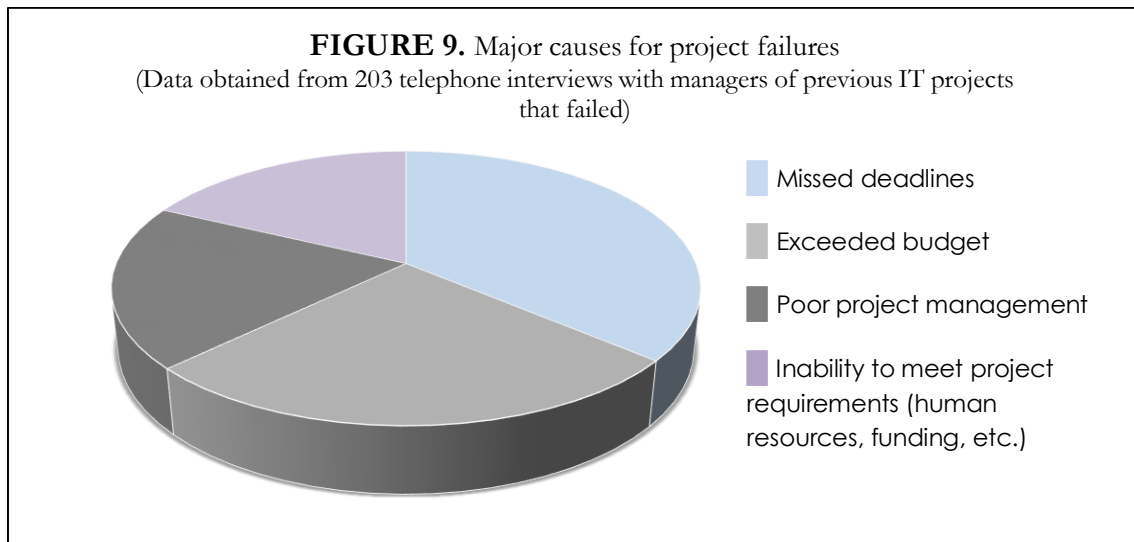
Source: the National Statistics Institute of Spain (INE), 2014. *Statistics concerning R&D&I activities in Spain.*

FIGURE 8. Evolution of the total internal expenses on R&D&I activities classified by autonomous community in SPAIN between 2003 and 2014.



Source: own elaboration from data collected from the National Statistics Institute of Spain (INE), *Estadística sobre actividades de I+D, Cifras del padrón municipal 2000-2001 y Cifras de Población y Censos Demográficos (población a 1 de julio).*

FIGURE 9. Major causes for project failures according to the Bull Survey (1998)



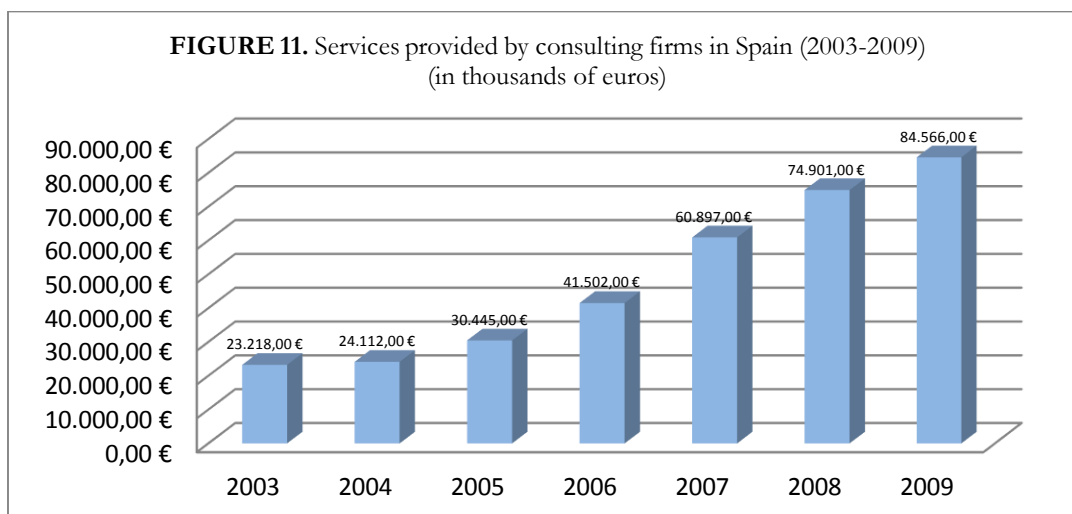
Source: own elaboration from data obtained from the Bull Survey conducted in 1998.

FIGURE 10. Number of active enterprises in SPAIN classified by number of employees (2014)

SMEs (99.83%)	Micro-enterprises (95.97%)	0 employees	1,672,483	2,988,914	3,114,273
		1-2 employees	921,000		
		3-5 employees	284,612		
		6-9 employees	110,819		
	Small enterprises (3.48%)	10-19 employees	70,226	108,383	
		20-49 employees	38,157		
	Medium enterprises (0.55%)	50-99 employees	11,223	16,976	
		100-249 employees	5,753		
Big enterprises (0.17%)	249-499 employees	3,346	5,037		
	500-999 employees	942			
	1000-4999 employees	646			
	≥ 5000 employees	103			
TOTAL:				3,119,310 firms	

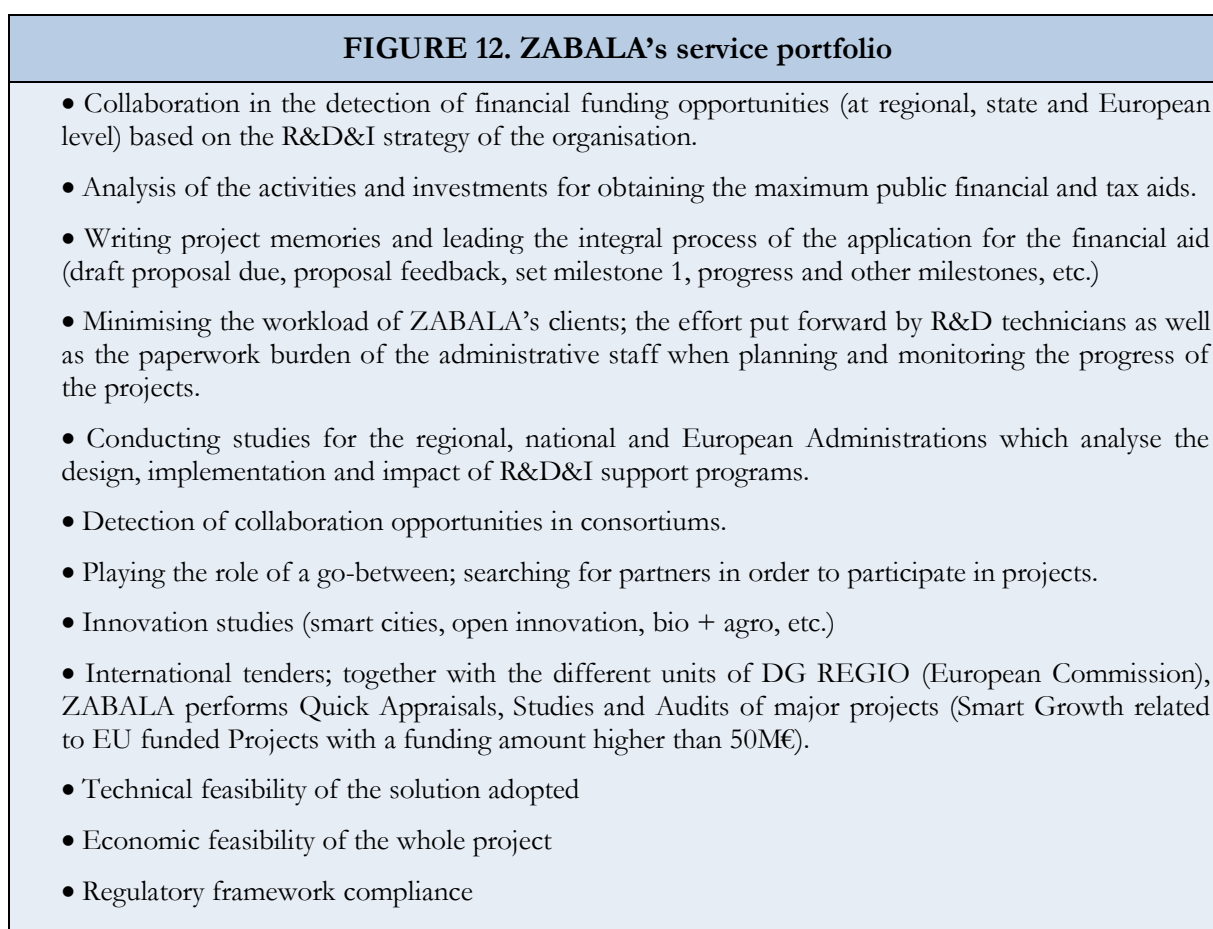
Source: own elaboration from data collected from the Ministry of Industry, Energy and Tourism (MINETUR, 2014).

FIGURE 11. Services provided by consulting firms in SPAIN in thousands of euros between 2003 and 2009.



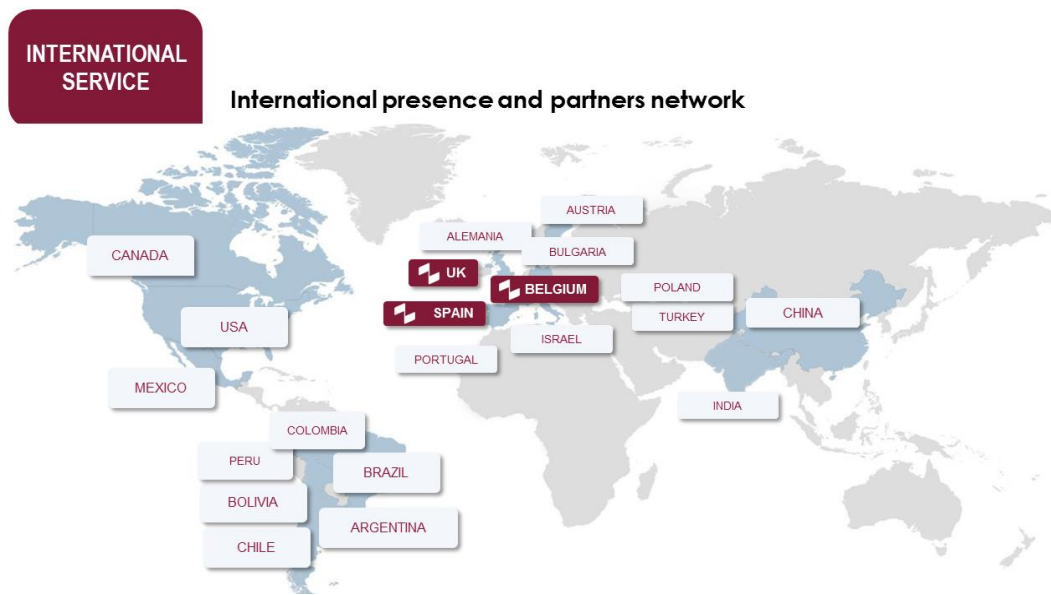
Source: own elaboration from data collected from the business directory called SABI.

FIGURE 12. ZABALA’s service portfolio according to the company’s brochure 2016:



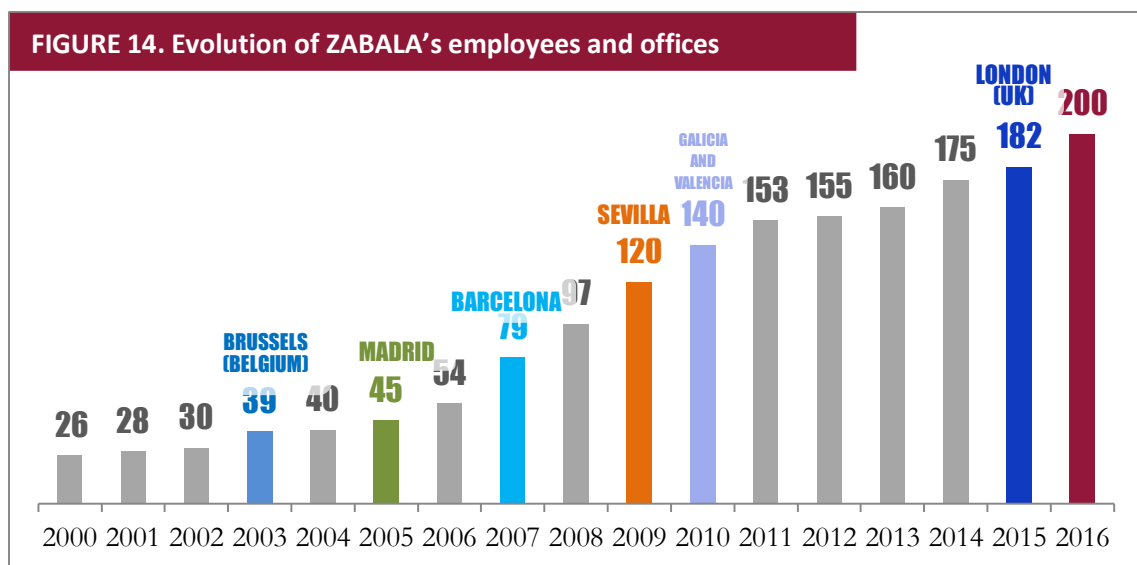
Source: own elaboration from data collected from ZABALA INNOVATION CONSULTING, S.A.

FIGURE 13. ZABALA’s offices and partners network according to the firm’s newsletter



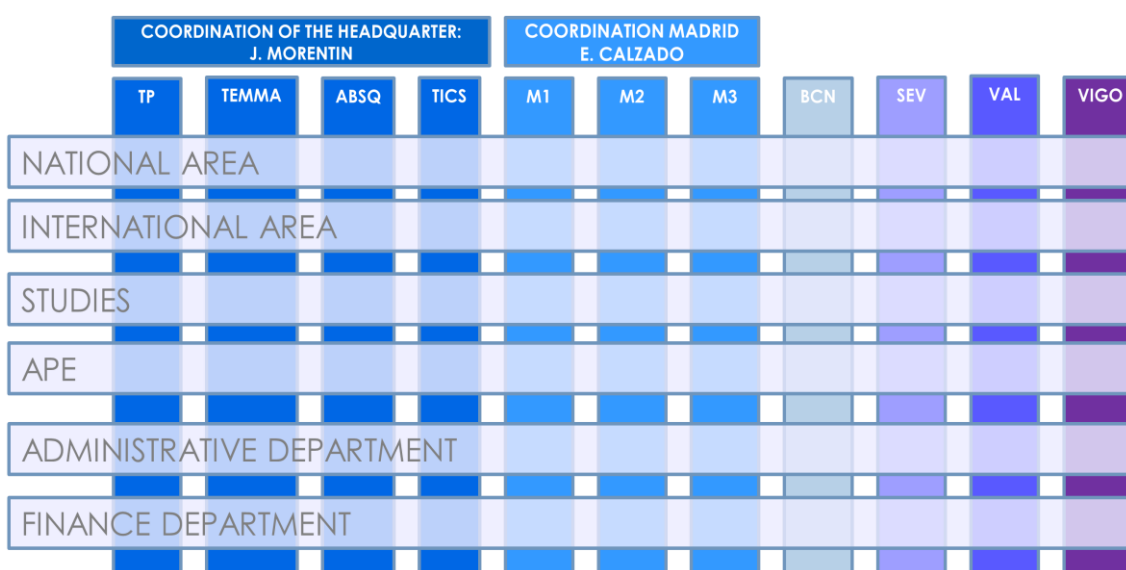
Source: data collected from ZABALA Innovation Consulting, S.A.

FIGURE 14. Evolution of the number of employees and establishment of the offices of ZABALA Innovation Consulting, S.A. (2000-2016)



Source: data collected from ZABALA Innovation Consulting, S.A.

FIGURE 15. ZABALA’s matrix structure according to the company’s brochure (2016).



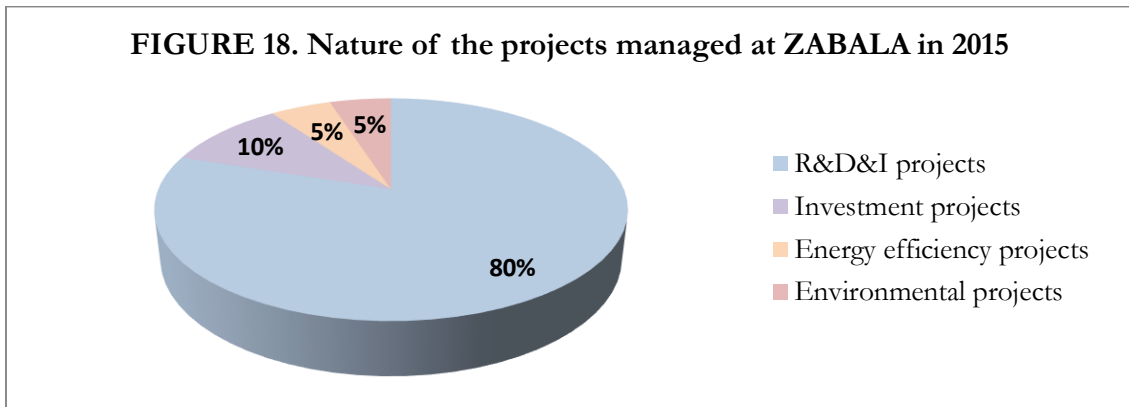
Source: data collected from ZABALA Innovation Consulting, S.A.

FIGURE 16. ZABALA’s regional-level competitors according to statistics obtained from SABI (2016)

COMPANY NAME	LOCATION	COMPANY NAME	LOCATION
ATOMM	MADRID BARCELONA	SICROM	SEVILLA
GESTIONA GLOBAL	EXTREMADURA	Finanzas & Idi	GRANADA
INNIZIA	EXTREMADURA	Bravo Consultores de negocio	SEVILLA
Infodare	EXTREMADURA	Nordic Innovators	MÁLAGA
ASESORIA PANIAGUA	EXTREMADURA	Forwit	SEVILLA
INNODE Consultoria Estratégica	EXTREMADURA	Bioazul, S.L.	MÁLAGA
MICROBIEX	EXTREMADURA	Grupo Marwen Calsan	JAÉN
Advante Consulting Innovation	BADAJOS	Grupo Desarrolla	ALMERÍA
Corporación Tecnológica de Andalucía_CTA	SEVILLA	LeaderTecna Ingenieros, S.L.	VALENCIA
Instituto Andaluz de Tecnología_IAT	SEVILLA	INNCOME	MADRID
Andalucía Lab	MÁLAGA	European Management Consulting (EMC)	MÁLAGA
IND Consultores	SEVILLA	MASIDI INGENIERÍA	BURGOS
Dabo Consulting	VARIAS	GESTAY FINANCIACIÓN	SAN SEBASTIÁN VITORIA CANTABRIA
BaobaT Solutions	SEVILLA	INFIYDE	BILBAO
SICROM	SEVILLA	VECTOR HORIZONTE	SEVILLA

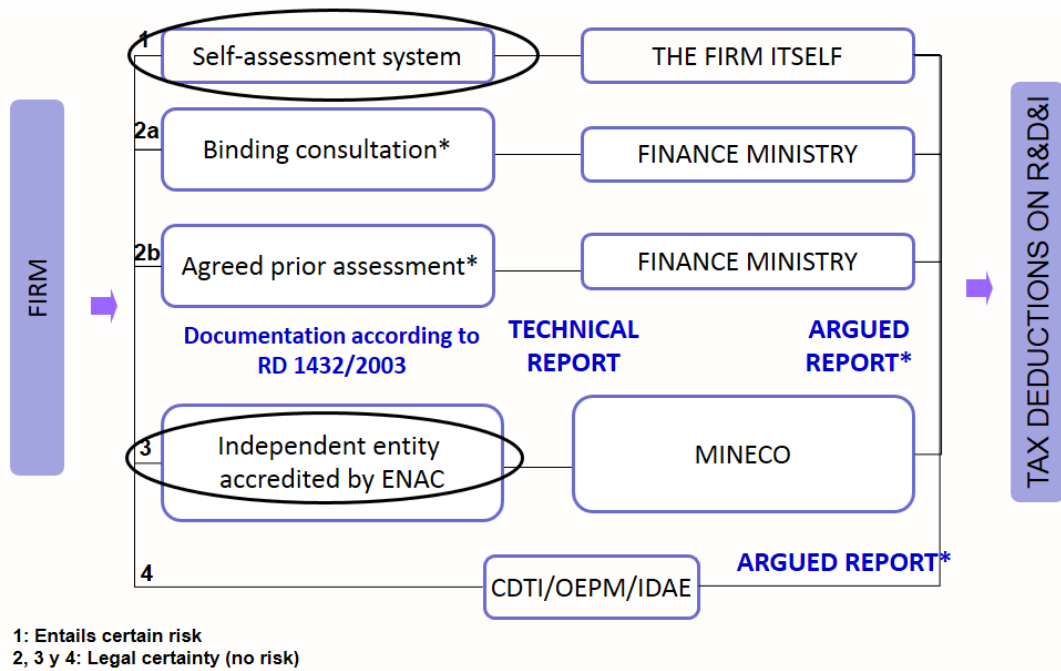
Source: own elaboration from data collected from the business directory called SABI.

FIGURE 18. Nature of the projects managed at ZABALA Innovation Consulting in 2015.



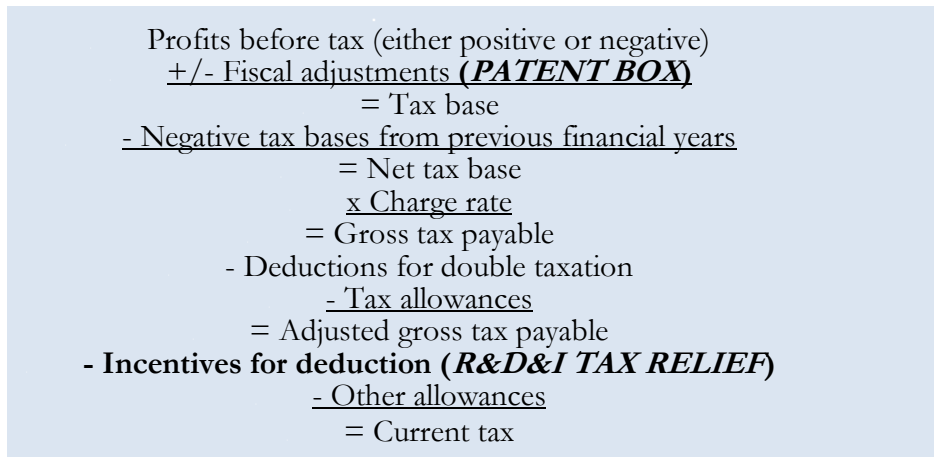
Source: own elaboration from data collected from ZABALA Innovation Consulting, S.A.

FIGURE 19. R&D&I activities' tax allowance calculations' approaches available at state-level



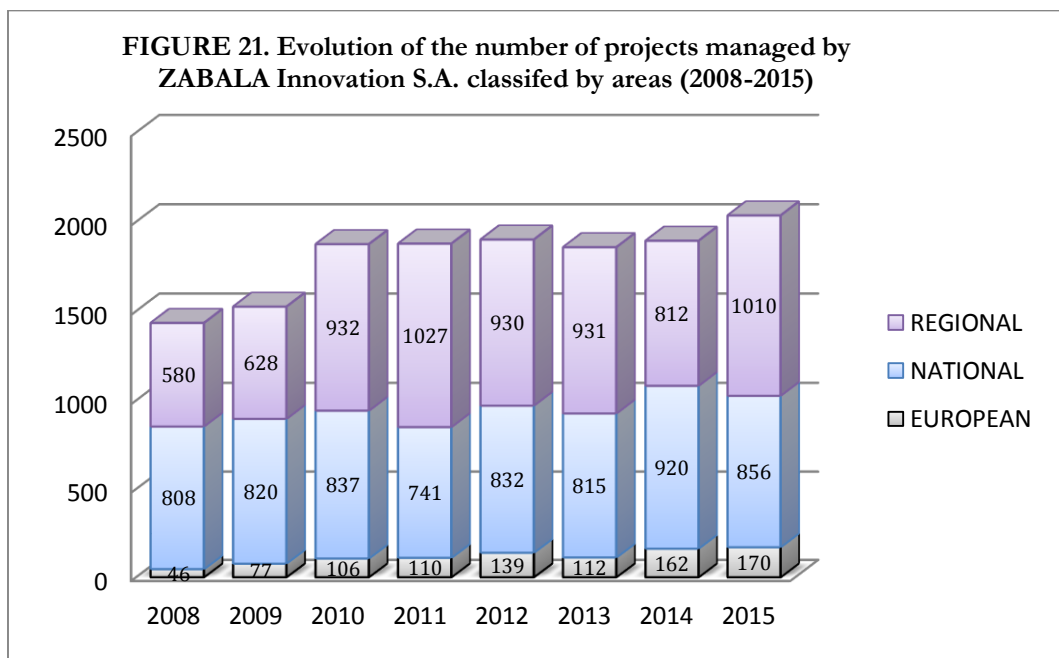
Source: own elaboration from data collected from ZABALA Innovation Consulting, S.A.

FIGURE 20. Tax incentives calculated at ZABALA Innovation Consulting S.A. highlighted on the settlement structure of the corporate income tax.



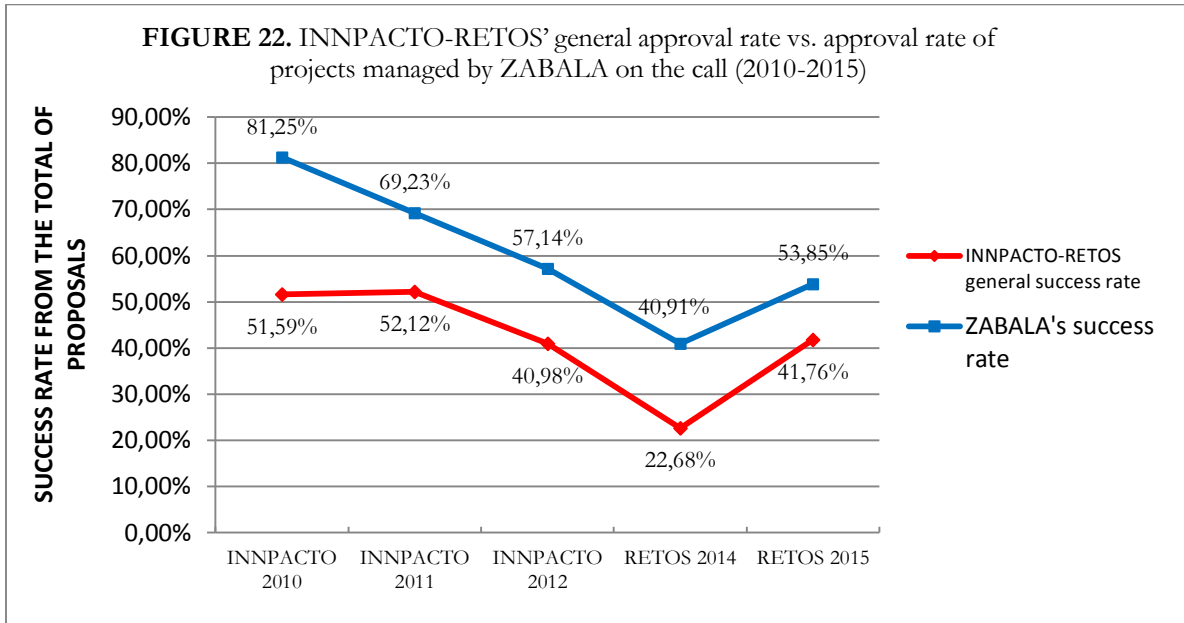
Source: own elaboration from data collected from the Spanish Corporate Tax Act (1969).

FIGURE 21. Evolution of the number of projects managed by ZABALA Innovation Consulting S.A. classified by areas (2008-2015)



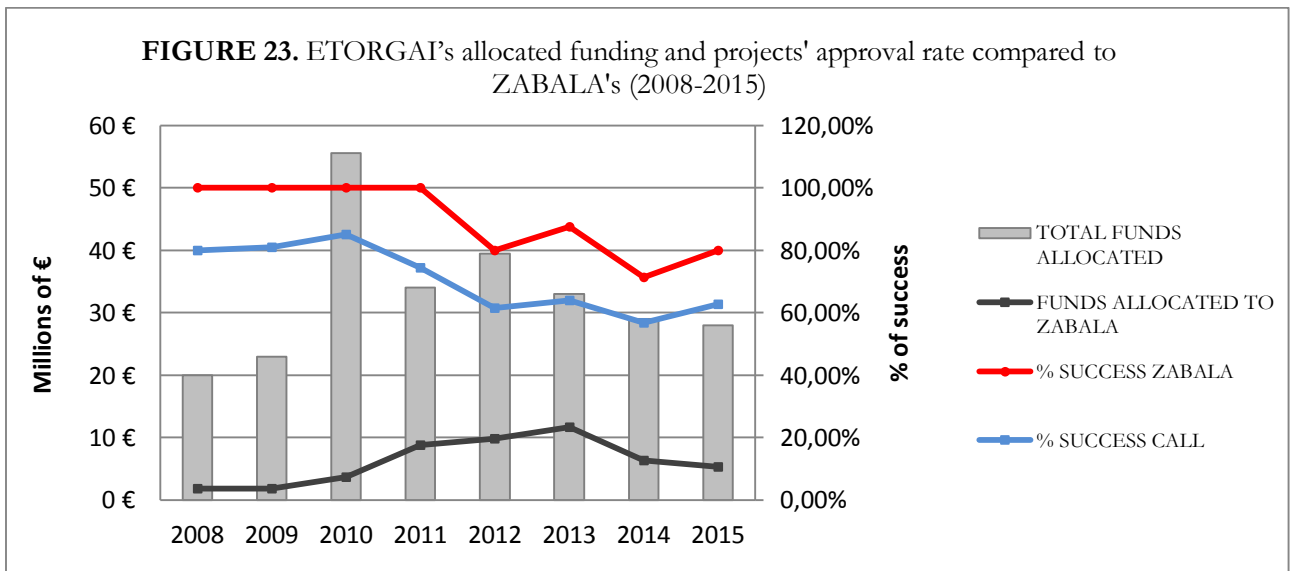
Source: own elaboration from data collected from ZABALA Innovation Consulting, S.A.

FIGURE 22. INNPACTO-RETOS' general approval rate vs. approval rate of projects managed by ZABALA on the call (2010-2015)



Source: own elaboration from data collected from ZABALA Innovation Consulting S.A.

FIGURE 23. ETORGAI's general approval rate vs. approval rate of projects managed by ZABALA on the call (2008-2015).



Source: own elaboration from data collected from ZABALA Innovation Consulting S.A.

9. LIST OF TABLES

TABLE 1. Main consulting firms competing for market share at state-level along with ZABALA Innovation Consulting S.A.	15
TABLE 2. Classification of ZABALA’s technicians at the office of MUTILVA	17
TABLE 3. Questions needed to ask for the understanding of the proposal	20
TABLE 4. Applicable tax legislations in Spain (2016)	29
TABLE 5. Ranking of Spanish companies according to the raised funds on the European Union’s Seventh Framework R&D Programme (2007-2013) as stated by CDTI	33
TABLE 6. MINECO's INNFACTO-RETOS program for R&D&I funding.....	33
TABLE 7. Funds collected by ZABALA on projects presented to ETORGAI.....	33

TABLE 1. Main consulting firms competing for market share at state-level along with ZABALA Innovation Consulting S.A.

NAME OF THE CONSULTANCY FIRM	OFFICES	NUMBER OF EMPLOYEES	REVENUES ACCOUNTED FOR 2014	SERVICES	STRENGTHS	WEAKNESSES
F INICIATIVAS I MAS D MAS I, S.L.	BARCELONA MADRID PALMA DE MALLOCA	300 employees of which 180 are engineers or Scientifics	13.649.308,00 €	Deductions on R&D&i Aids on R&D&i Patent Box R&D&i Management of the R&D&i Bonuses and subsidies in the social security subsidies Deductions on Environment Local taxes on Property Taxes and Business Activities Tax	Head office located in Spain, expanded to France, Portugal, Belgium, Canada, Brazil, USA and Chile. Really specialised in tax deductions.	Little experience in European aids management.
Added Value Solutions, S.L. (AVS)	VALENCIA	60	1.179.000,00 €	Deductions on R&D&i Aids on R&D&i Patent Box R&D&i Management of the R&D&i	Good at Tax Management and they have strong bonds with the CEOE	Financial aids at regional, state and European level.
I PLUS F	MADRID	70	6.000.000,00 €	Deductions on R&D&i Aids on R&D&i Patent Box R&D&i	Really oriented to Tax Management. Leader in the Castilla-León market.	No management of financial aids.
EUROFUNDING INNOVATION (Asesoría imasdmasi)	MADRID	80	3.581.605,00 €	Deductions on R&D&i Aids on R&D&i Patent Box R&D&i Management of the R&D&i Bonuses and subsidies in the social security subsidies Deductions on Environment Local taxes on Property Taxes and Business Activities Tax	Really oriented to Tax Management.	Little experience in European projects and financial aids.
ALMA CONSULTING GROUP ESPAÑA, SL. + LOWENDAL MASAI	MADRID	70	5.064.409,00 €	Deductions on R&D&i Aids on R&D&i Patent Box R&D&i Management of the R&D&i Deductions on Environment Local taxes on Property Taxes and Business Activities Tax	A big group at international level. Offices scattered over 10 different countries. Manages the entire innovation process to obtain financial subsidies and tax relief.	Little experience in European projects and financial aids.
Grand Armée Conseil España, S.L. (GAC)	MADRID	10	418.370,00 €	Deductions on R&D&i Aids on R&D&i Patent Box R&D&i Management of the R&D&i Bonuses and subsidies in the social security subsidies Deductions on Environment Local taxes on Property Taxes and Business Activities Tax	Really oriented to Tax Management. A big international group with offices located in 6 different countries all over the world.	Despite all the efforts put forward, they do not have a large market share.
EIDOSTECH CONSULTORES, S.L.	BILBAO	31	1.214.635,00 €	Deducciones I+D+i Ayudas I+D+i Patent Box I+D+i Gestión de la I+D+i Medio Ambiente Deducciones Impuestos Locales IBI - IAE Estudio Gastos Generales	Really integrated in Bilbao, well known by the Public Administrations at regional and state level.	Little experience in European projects and financial aids.
LOWENDALMASAI ESPAÑA, S.A. (LOWENDAL)	MADRID	65	6.062.499,00 €	Deductions on R&D&i Aids on R&D&i Patent Box R&D&i Management of the R&D&i Deductions on Environment Local taxes on Property Taxes and Business Activities Tax	Multinational company with offices all over the world that provide services related to International Tax Management and optimisation of the management. Good at Patent Box.	A little bit dispersed, not really centered in the management of the innovation process.
SCA	MADRID	70	2 M€	Deductions on R&D&i Aids on R&D&i Patent Box R&D&i Management of the R&D&i Deductions on Environment Local taxes on Property Taxes and Business Activities Tax	They offer other services to specific sectors that facilitate the access to them.	A little bit dispersed, not really centered in the management of the innovation process.
ECONET, S.L.	MADRID	19	756.886,00 €	Manages big subsidies	The information. They work really well to obtain information for Administrations.	They are not prepared for managing public aids.
EVOCAS CONSULTING, S.L.	MADRID	18	867.436,00 €	Deductions on R&D&i Aids on R&D&i Management of the R&D&i Environment related deductions	Well known for their accuracy when working.	No patent-box services or other ones.
AROSA INGENIEROS CONSULTORES, S.L. (AROSA)	MADRID	15	2.552.477,00 €	Deductions on R&D&i Aids on R&D&i Management of the R&D&i Environment related deductions	Really oriented to Tax Management.	On its web site they continue publicly publishing their client portfolio.
INSTITUTO ASESOR PARA SUBVENCIONES, AYUDAS Y FINANCIACIÓN, S.L. (IASAF)	MADRID	6	270.517,00 €	Deductions on R&D&i Aids on R&D&i Management of the R&D&i Patent Box	It is part of a bigger consultancy firms' group. Really active marketing plan. Focused on R&D&I management and Tax Management.	

Source: own elaboration from data collected from the business directory called SABI.

TABLE 2. Classification of ZABALA's technicians at the office of MUTILVA

TEAMS	STUDIES	PEOPLE	PROPORTION
ABSQ	Bachelor in Agricultural Engineering	7	35,00%
	Bachelor in Industrial Engineering	2	10,00%
	Bachelor in Pharmacy	2	10,00%
	Bachelor in Biology	3	15,00%
	Bachelor in Economics	1	5,00%
	Bachelor in Chemistry	5	25,00%
		20	100%
TEMMA	Bachelor in Industrial Engineering	16	72,73%
	Bachelor in Economics	1	4,55%
	Bachelor in Chemistry	5	22,73%
		22	100%
TICS	Bachelor in Telecommunications Engineering	13	65,00%
	Bachelor in Industrial Engineering	3	15,00%
	Bachelor in Computer Engineering	1	5,00%
	Bachelor in Business Studies	1	5,00%
	Bachelor in Environmental Sciences	1	5,00%
	Bachelor in Economics	1	5,00%
		20	100%
TP - Technologies of Production	Bachelor in Telecommunications Engineering	1	4,76%
	Bachelor in Industrial Engineering	19	90,48%
	Bachelor in Business and Law	1	4,76%
		21	100%

Source: own elaboration from data collected from ZABALA Innovation Consulting S.A.

TABLE 3. Questions needed to ask for the understanding of the proposal

What for?	New market, product replacement, etc.
What?	Brief description of what the proposal consists in.
How?	The firm on its own, in collaboration with universities, technological centres, or other firms.
When?	Setting temporality (starting date, and expected finishing period).
How much?	Estimating the approximate global budget of the proposal.
Others	Questions related to the way the proposal fits with the subsidy calls.

Source: own elaboration from data collected from ZABALA Innovation Consulting S.A.

TABLE 4. Applicable tax legislations in Spain (2016)

Corporation tax act from Navarre, the Basque Country and the State

	STATE	NAVARRRE	THE BASQUE COUNTRY
ALLOWANCES APPLICABLE TO R&D PROJECTS	<p>25% → until the average expenses incurred in R&D activities in the last two years.</p> <p>42% → the rest of the expenses which are above the average expenses incurred in the last two years.</p> <p>17% additional → expenses of workers employed exclusively for conducting R&D activities</p>	<p>40%</p> <p>10% additional → expenses of workers employed exclusively for R&D activities and Technological Centres and Universities.</p>	<p>30% → until the average expenses incurred in R&D activities in the last two years.</p> <p>50% → the rest of the expenses which are above the average expenses incurred in the last two years.</p> <p>20% additional → expenses of workers employed exclusively for R&D activities and Technological Centres and Universities.</p>
ALLOWANCES APPLICABLE TO INNOVATION PROJECTS	Everything at 12%	Everything at 15%	<p>Everything at 15%</p> <p>20% → just for Technology Centres in the Basque Technology Network</p>
OFFSETTING THE EFFECT OF INCREASED TAX RELIEF WHEN SUBSIDIES ARE GRANTED	Once the subsidy allocated proportionately to each of the expenses, the 65% of the subsidy is subtracted from the deductible basis. In this way, the Finance Ministry ensures that there is no double-subsidy; one coming from the grant itself and the other one because of increased deduction allowances obtained from expenses which have been subsidised.	Once the subsidy allocated proportionately to each of the expenses, the 1-% of the subsidy is subtracted. In this way, the Government of Navarre ensures that there is no double-subsidy; one coming from the grant itself and the other one because of increased deduction allowances obtained from expenses which have been subsidised.	Once the subsidy allocated proportionately to each of the expenses, the 1-% of the subsidy is subtracted. In this way, the Government of the Basque Country ensures that there is no double-subsidy; one coming from the grant itself and the other one because of increased deduction allowances obtained from expenses which have been subsidised.
ALLOWANCES APPLICABLE TO NEW ASSETS	8% for the assets exclusive of R&D activities.	10% for the assets which do not need to be exclusive of R&D activities.	10% for the assets exclusive of R&D activities.
DURATION	<p>15 years</p> <p>18 years (from 01/01/2012 on)</p>	10 years	15 years
LIMITS/QUOTA	Without any limit	Without any limit	Without any limit

Sources: own elaboration from data collected from Ley 27/2014, de 27 de noviembre, del Impuesto de Sociedades, chapter IV, art. 35; Ley Foral 24/1996, de 30 de diciembre, del Impuesto sobre Sociedades; Ley Orgánica 3/1979, de 18 de diciembre.

TABLE 5. Ranking of Spanish companies according to the raised funds on the European Union's Seventh Framework R&D&I Programme (2007-2013) as stated by CDTI.

Ranking of Spanish companies		Activities	
		Nº	Leaded
1	Indra Sistemas, S.A.	58	11
2	Telefónica Investigación y Desarrollo, S.A.	112	15
3	Atos Spain, S.A.	148	35
4	Acciona Infraestructuras, S.A.	110	11
5	Ingeniería de Sistemas para la Defensa de España ISDEFE	33	5
6	Abengoa Bioenergía Nuevas Tecnologías Sociedad Anónima	6	1
7	Gamesa Innovation and Technology, S.L.	7	3
8	Zabala Innovation Consulting, S.A.	12	4
9	Industria de Turbo Propulsores, S.A.	17	0
10	Acciona Energía, S.A.	10	2

Source: annual reports from *Centro para el Desarrollo Tecnológico Industrial* (CDTI).

TABLE 6. MINECO's INNPACTO-RETOS program for R&D&I funding

CALL	Total of the call			ZABALA's total		
	Presented proposals	Funded proposals	% of success	Presented proposals	Funded proposals	% of success
INNPACTO 2010	378	195	51,59%	32	26	81,25%
INNPACTO 2011	756	394	52,12%	65	45	69,23%
INNPACTO 2012	837	343	40,98%	56	32	57,14%
RETOS 2014	1089	247	22,68%	66	27	40,91%
RETOS 2015	680	284	41,76%	39	21	53,85%
TOTAL	3740	1463	39,12%	258	151	58,53%

Source: own elaboration from data collected from ZABALA Innovation Consulting S.A.

TABLE 7. Funds collected by ZABALA on projects presented to ETORGAI

YEAR	PRESENTED	APPROVED	% SUCCESS CALL	TOTAL FUNDS ALLOCATED	PRESENTED	APPROVED	% SUCCESS ZABALA	FUNDS ALLOCATED TO ZABALA	% OF FUNDS MANAGED BY ZABALA
2008	15	12	80,00%	20.000.000,00 €	1	1	100,00%	1.852.612,00 €	9,26%
2009	21	17	80,95%	23.000.000,00 €	2	2	100,00%	1.823.338,00 €	7,93%
2010	47	40	85,11%	55.607.295,00 €	5	5	100,00%	3.728.157,00 €	6,70%
2011	43	32	74,42%	34.066.162,00 €	8	8	100,00%	8.817.328,00 €	25,88%
2012	65	40	61,54%	39.499.000,00 €	10	8	80,00%	9.863.098,00 €	24,97%
2013	50	32	64,00%	33.000.000,00 €	8	7	87,50%	11.682.939,00 €	35,40%
2014	51	29	56,86%	29.000.000,00 €	7	5	71,43%	6.374.433,00 €	21,98%
2015	43	27	62,79%	28.000.000,00 €	5	4	80,00%	5.304.814,00 €	18,95%
TOTAL	335	229	68,36%	262.172.457,00 €	46	40	86,96%	49.446.719,00 €	18,86%

Source: own elaboration from data collected from ZABALA Innovation Consulting S.A.

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