Harvard Deusto Business Research

Vol. 6, No. 3 (2017)

Harvard Deusto

Business Research

Vol. 6, No. 3 (2017)

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https://doi.org/10.3926/hdbr.192

Letter from the Managing Editor

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This new issue of *Harvard Deusto Business Research* presents studies and research on the mismatch between the low level of investment in R&D and the growth of Spanish exports, the implementation of International Financial Reporting Standards in Colombia, the levels of internationalization of Spanish multinational companies and privacy by design.

The primary objective of the first article by Rafael Pampillón Olmedo and Rafael Pampillón Albert is to study why Spanish exports are on the increase, in spite of the low level of investment in R&D in this country. The authors analyze the causes of this imbalance between low R&D investment and the growth in exports and present a series of proposals in order to remain on the path of economic growth in Spain, which involve continuing the policies that have promoted an increase in its exports and providing incentives for greater investment in R&D and innovation.

Next, Martha Cecilia Álvarez, Lina María Muñoz, Diana Sirley Tabares and Nora Elvira Hernández consider the differences that will occur between accounting and financial information and the tax base or fiscal information with the implementation of the International Financial Reporting Standards (IFRS). The consequences of said differences will be reflected in the deferred tax and in a new approach to the presentation of financial and accounting information for decision-making within companies in the country, which reasonably reflects the economic situation to the Federal Government.

In the third article, David Tanganelli analyzes how the amount of capital invested and the attitudes of the management to foreign markets and cultures impact the internationality of Spanish multinational companies. He empirically verifies that a geocentric attitude (global vision and procedures that are still sensitive to local differences) facilitates greater levels of internationalization, while the modes of entry that involve a greater investment of capital abroad, such as the creation of wholly owned subsidiaries, are not necessarily associated with the highest level of internationality.

In the last article of this issue, Santiago Martín-Romo Romero and Carmen de Pablos Heredero analyze the privacy by design (PbD) and conclude that this will soon be a mandatory requirement for companies that process personal data. The General Data Protection Regulations will enter into force at the end of May 2018 and compliance with them will be mandatory for companies in the European Union. Given that the PbD philosophy leads to the protection of personal data, this article proposes starting with the protection of the design of commercial activities, and thus it provides a set of organizational mechanisms aimed at implementing protective measures based on privacy by design. It also makes recommendations based on the analysis of the strengths, weaknesses, threats and opportunities.

As always, I would like to thank the authors for their effort and the inestimable collaboration and professionalism on the part of both the members of the editorial committee and the referees, as well as the warm reception by the readers of *Harvard Deusto Business Research*. Thank you very much to everyone.

https://doi.org/10.3926/hdbr.186

In Spain, is the expenditure on R&D a determining factor in its external competitiveness?[1]

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Received: November, 2017.
Accepted: December, 2017.
Published: December, 2017.

Title

In Spain, is the expenditure on R&D a determining factor in its external competitiveness?

Abstract

This article has as its fundamental objective the study of the growth in Spanish exports —a fruit of better competitiveness— despite the low investment in Research and Development (R&D) in Spain.

Between 2010 and 2016 in Spain, the investment in R&D with respect to the GDP maintains a negative tendency, farther away from the average investment in R&D of the EU-28 that, in that same period, grows year over year.

However, this work reflects that Spain is an exception. One can affirm that Spanish competitiveness doesn't adjust to its investments in R&D. It's demonstrated that in recent years, the most developed countries have achieved a high level of competition thanks to technological development due to a bigger and better investment in innovation. Despite of its low investment in R&D, the exports of Spanish companies have been increasing progressively from 2010 to 2016, which has increased its percentage of all global exports.

The causes of this imbalance between low investment in R&D and more competitiveness are, principally: the reduction of production cost, the fall of sales of Spanish companies in the national market and the development of factors such as infrastructure, health, education, and technological maturity that improve productivity and stimulate exports.

This study concludes with a series of propositions to maintain this pattern of economic growth in Spain, by way of its competitiveness, and highlights the necessity of policies, that have promoted an increase in its exports and to incentivize a larger investment in innovation, following the example of other developed countries.

Key words

R&D, exports, competitiveness, innovation, technological development, productivity.

[1] We would like to offer our most sincere thanks to the two anonymous referees chosen by this journal and to Leonardo Lima (research assistant at IE Business School), whose revisions, reflections and suggestions have contributed to the substantial improvement of this work.

Spain holds 42nd place in the world ranking of innovation, while it occupies a better position (34th) in competitiveness

1. Introduction

It is generally recognized that greater investment in R&D (research and development) in a country, both public and private, represents an improvement in its competitiveness as compared to the rest of the world. However, Spain, despite having a low level of expenditure in R&D and, at the same time, an inadequate composition, given that the public sector spends a larger percentage than other countries in the surrounding area, has managed to increase its share in world exports of goods and services in recent years at a rate greater than that of nearby countries.

In this work, we will show the data illustrating this situation and indicate the reasons for the increased competitiveness (reflected by increased exports) and the economic measures that can be applied so that Spanish sales abroad continue to grow over the long-term.

To do this, we will focus on the Spanish R&D data, we will analyze the competitiveness of Spain in recent years through different studies and its exports, and we will conclude by indicating the causes and possible economic improvements.

In times like the present, in which the country is emerging from an economic crisis, it is appropriate to engage in an in-depth study of the path that must be taken to continue to improve the economy and, with it, reduce unemployment. This work intends to contribute to a better understanding of something that directly affects the wellbeing of Spanish citizens; namely, economic growth, which has been led by the increase in exports.

2. Fundamental ideas and concepts

Investment in R&D permits countries to increase the technological level they need to improve the productivity of their workers, and with it, their competitiveness abroad. In the economic literature, there is a "consensus on the relevance of obtaining new technologies (innovation) for long-term growth" (Maroto Sánchez & Cuadrado Roura, 2006). This is due to the fact that the technological progress is, along with the improvement in professional training, a fundamental factor in increased labor productivity and the economic growth of a country.

Competitiveness is frequently defined as "conditions that make the birth, development and consolidation of companies possible that are capable of generating wealth, satisfying national consumers, exporting and creating employment" (Rubio & Baz, 2005). To analyze this competitiveness among countries, the World Economic Forum (WEF) uses the following twelve criteria:

1. Solidity of institutions.
2. Provision of infrastructures.
3. Macroeconomic stability.
4. Health and primary education.
5. Higher education.
6. Goods market efficiency.
7. Labor market's good performance.
8. Financial market sophistication.
9. Technological development.
10. Market size.
11. Good business management.
12. Innovation capability.

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From 2010 to 2016, both companies and the Public Administrations made important cuts in R&D expenditures: R&D expenditure as a percentage of the GDP recorded decreases for six consecutive years

It is precisely this last factor, innovation, where the importance of R&D comes into play. With regard to this criterion, Spain ranks 42nd in the world[2], below the 34th place it holds in terms of its competitiveness. This difference in the positions of R&D and competitiveness is, in part, the subject of this work (Schwab & Sala-i-Martín, 2017).

Innovation is not simply another factor that affects competitiveness, rather it is a determining factor, "as shown by different economists of recognized prestige, such as Freeman (1987), Porter (1990) and Nelson (1993), who indicate that obtaining new and advanced technologies is an important determining factor for the competitive position of a country or region. Therefore, innovation would be a vital factor for a country to be able to generate, over the long term, a better competitive position and sustainable economic growth" (Gutiérrez Roja, Heijs, Buesa Blanco & Baumert, 2016).

The Organization for Economic Cooperation and Development (OECD), in turn, defines competitiveness as the advantage or disadvantage a country has in the sale of its products in international markets (OECD, 2014), and it does so through two different systems:

1. The difference between the unit labor costs of a country and that of its competitors.
2. The difference, also among countries, in both industrial prices and those of consumer goods.

Therefore, even though there are different indicators, indexes and studies of how positive or negative the competitiveness is of a country, it seems that exports (or the export capacity) are a good indicator. In this sense, some authors refer to competitiveness as "the ability of companies to gain access to foreign markets and maintain or increase their shares in said markets" (Bougrine, 2001).

For these reasons, we are going to study how the growth of Spanish exports is a reflection of an improvement in their competitiveness and we will analyze how it is possible that, in spite of a low level of investment in R&D, the exports by Spanish companies continue to increase. We must take into account the fact that the investment in R&D produces long-term results, which means guaranteed future economic growth.

Finally, it is well known that the exchange rate between the national currency and that of the country to which the export is being made can affect competitiveness. However, the main importers of Spanish goods and services use the same currency as Spain (the euro), so it can be determined that it is not a decisive factor for most Spanish exports (O'Kean, 2010).

3. Situation of R&D in Spain

As can be seen in Table 1, in Spain, the R&D expense as compared to the gross domestic product (GDP) has increased during the period 2005-2010, but after 2010, it begins to decrease as the result of the economic crisis. In this manner, during 2016, Spain dedicated a total of €13,260 million to R&D, a much smaller figure than the €14,588 million invested in 2010, when it reached its maximum historical level. The R&D expenditure in 2016 continues to be very low, representing only 1.19% of the GDP, which is lower than the 1.22% in 2015 and much lower than the 1.4% in 2010. As a percentage of the GDP, the R&D expenditure has recorded declines for six straight years (see Table 1).

[2] In addition, within the chapter on innovation, according to the WEF, Spain is in 53rd place in the world in terms of investment in R&D by companies, 67th place in terms of collaboration between businesses and universities and in 86th place, also in the world, in obtaining advanced technology products by the Spanish Public Administrations.

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Table 1
R&D expenditure in Spain

Year	R&D Expenditure (millions of euros)	R&D Expenditure (percent of GDP)	Annual variation in R&D expenditure as a percent of the GDP
2005	10,197	1.12%	6%
2006	11,815	1.20%	7%
2007	13,342	1.27%	6%
2008	14,701	1.35%	6%
2009	14,582	1.39%	3%
2010	14,588	1.40%	1%
2011	14,184	1.36%	–3%
2012	13,392	1.30%	–4%
2013	13,012	1.26%	–3%
2014	12,821	1.23%	–2%
2015	13,172	1.22%	–1%
2016	13,260	1.19%	–2.5%

Source: INE (2017).

These continuous declines are the result of the budget cuts that the companies and the Public Administrations made in recent years in response to the economic crisis, an unfortunate situation that will become evident over the medium-term in the form of the lesser capacity of our economy to produce innovations. It should be remembered that R&D, foreign technology and improved human capital are the main sources of improvement in the levels of productivity of the Spanish business fabric.

International comparison

But is the expenditure in R&D in line with that of our surrounding countries?

If we compare the situation of Spain to that of other countries, the result is not very favorable. The latest figures published by the OECD show that the R&D expenditure in Spain, measured as a percentage of the GDP (1.2%), is quite a bit less than that of other developed economies, such as France (2.2%), Germany (2.9%), Austria (3.1%), United States (3%), South Korea (4%), Japan (3.5%), Sweden (3.25%) and Finland (2.75%). On average, the countries of the OECD spend 2% of their GDP. Countries with lower incomes per inhabitant than Spain, such as Portugal (1.3%) and China (2.1%), for example, spend a greater percentage of their GDP than Spain. Table 2 shows the mean investment in R&D of the 28 countries in the European Union (EU) and compares it to the Spanish investment.

While the European trend in recent years (from 2010 to 2016) has been to increase investments in R&D, in Spain, they have been decreasing, which reveals the imbalance that Spain has in terms of R&D, as compared to the rest of the European Union. While in the last year, Spain invested 1.19% of its GDP in R&D, in Europe, the investment was greater than 2%. In other words, the amount spend by Spain on R&D represents only 58.6% of the European average (see Table 2).

By analyzing the data on the Spanish investment in R&D and comparing them to the equivalents of the average of the European Union, it is revealed that the case of Spain does not form part of the increasing trend experienced by the investment in R&D in the EU-28.

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During the period 2003-2016, Spain gained a share in world goods exports

Table 2
R&D expenditure/GDP in Spain in relation to the average of the European Union

	R&D Expenditure/GDP (percentage)		
	Spain (X)	EU-28 (Y)	X/Y
2008	1.35	1.85	72.8
2009	1.39	1.94	71.6
2010	1.40	1.93	72.5
2011	1.36	1.97	69.0
2012	1.30	2.01	64.7
2013	1.26	2.03	62.1
2014	1.23	2.04	60.3
2015	1.22	2.03	60.1
2016	1.19	2.03	58.6

Source: Eustat (2017) and INE (2017).

Whereas after 2010, during the worst moments of the latest economic crisis, the European countries reacted by increasing investment in R&D in proportion to the GDP, Spain began to gradually reduce this percentage, both by the public sector, seeking a reduction in the public expenditure, and by the private sector, to reduce their costs and survive the crisis.

In summary, it is observed that investment in R&D as compared to the Spanish GDP between 2010 and 2016 remains low and increasingly further away from the average for the EU-28, which shows an upward trend.

4. Competitiveness and the exports of goods and services

Competitiveness, as defined in section 2, is the result of the effort of business owners to reduce production costs, increase their technological level and improve the level of their human capital. The consequence is that for "a nation to be successful in world trade, its companies must achieve competitive advantages, i.e., they must gain shares in both the national and international market" (Buendía Rice, 2013).

Competitiveness can be measured according to different criteria. The results of the twelve criteria used by the WEF (see section 2) are shown in Table 3.

Table 3
Ranking of competitiveness

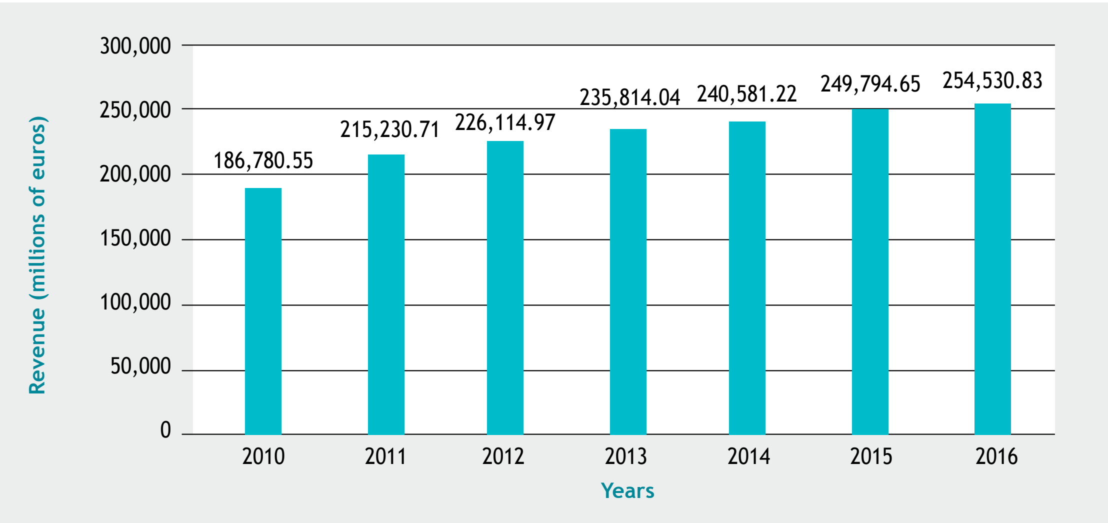
	2002	2007	2015	2017
United States	1	1	3	2
Germany	14	7	4	5
France	30	16	22	22
United Kingdom	11	12	10	8
Spain	22	29	33	34
Portugal	28	34	38	42
Italy	39	49	43	43

Source: Schwab & Sala-i-Martín (2017).

These data indicate that, over the last decade, the relative competitiveness of the Spanish economy has declined and is below that of other important countries in the European Union (such as France and Germany), although it remains above that of countries like Portugal and Italy, whose investment in R&D (1.3% and 1.33%, respectively) is greater than the investment made by Spain (1.19%) during that same year (Eustat, 2017).

After analyzing the competitiveness according to the ranking created by the WEF, we proceed to observe how this competitiveness is related to the export of goods and services. There is a close relationship between competitiveness and exports, since the latter and any improvement in them are the direct result of the competitive evolution of a country. As we can see in Table 4, between 2010 and 2016, the exports of goods have increased year after year, favoring the path towards economic growth and economic recovery that occurred in late 2013.

Table 4
Exports of Spanish goods



Source: ICEX (2017).

The result of the increase in exports is the growth of the Spanish share of world goods exports (see Table 5), since as we have indicated before, both are directly related.

Table 5
Share (percentage) of world goods exports

	2003	2012	2014	2015	2016	Difference 2003-2016
China	5.9	11.4	12.4	14.0	13.1	7.2
United States	9.8	8.6	8.6	9.1	9.1	–0.7
Germany	10.2	7.8	8.0	8.1	8.4	–1.8
Japan	6.4	4.5	3.6	3.4	4.0	–2.4
France	5.3	3.2	3.1	3.1	3.1	–2.2
Spain	1.6	1.6	1.7	1.7	1.8	0.2

Source: WTO (2017).

Spain is very competitive, thanks to its good global position in infrastructures, health, higher education, business management and the capacity to obtain patents

It can be seen that Spain and China are the only two countries, of those shown on the table, that increased their share in the world goods exports during the 2003-2016 period. On the other hand, the rest of the countries (United States, Germany, Japan and France) reduced their share.

In recent years, there has been a trend in emerging countries to increase their share in world exports. However, as can be seen in Table 5, between 2003 and 2016, the developed countries tended to show losses in this share. In the cases of Germany and the United States, which have a technologically very advanced industry, it can be observed that since 2012, they increase their share in world exports after an initial decrease. This is due to a large extent to the investment made in innovation by these two countries. According to the World Intellectual Property Organization (WIPO), on the 2016 World Innovation Index, both countries improved their position in terms of innovation with regard to previous years and rank in the top 10 of the world list. In addition, the WIPO highlights from these data that the German and US economies stand out for "the quality of innovation, a high-level indicator that takes into account the quality of the universities, the number of scientific publications and the number of international patent applications" (Cornell University, INSEAD & WIPO, 2016). This shows that, since 2012, the growth in competitiveness and exports from the most developed countries is linked to greater investment in R&D.

On the other hand, in Spain, investment in R&D is very small, in part because small companies represent more than 90% of the productive fabric, which is reflected in the decreased capacity for training of its workforce and R&D expenditure. In theory, in order to increase the productivity of the Spanish economy over the long term, it would be necessary to modernize the productive structure, giving greater weight to sectors that are more intensive in capital, achieving a more qualified workforce, larger companies, and of course, greater expenditure in R&D (Mingorance-Arnáiz & Pampillón, 2016).

In summary, it can be said that Spanish competitiveness does not match its R&D expenditure. Proof of this is that there are less competitive countries than Spain that are making a greater investment in innovation.

We insist: exports from Spanish companies have progressively increased from 2010 to 2016, which is very positive and has allowed them to increase their share in world goods exports.

Although this work focuses on the behavior of Spanish goods exports in recent years, foreign tourism and non-tourism related service exports have also had spectacular growth. An indicator of this is the growth at impressive annual rates of 8% of the non-tourism related service exports, showing that the process of outsourcing of the Spanish economy has been accompanied by a profound technological change. Therefore, a good part of the presence of Spanish companies abroad is not just in the manufacturing sector, but also in non-tourism related services, such as banking, commercial distribution, engineering, infrastructure management (airports, highways, etc.), water and waste management, energy distribution, renewable energy technology, telecommunications, etc.

5. Why is Spain competitive?

As we have seen throughout this work, Spain, in spite of a low expenditure in R&D, has a high level of competitiveness, as measured by the spectacular growth of goods and services exports. What factors are permitting Spanish companies to be so competitive?

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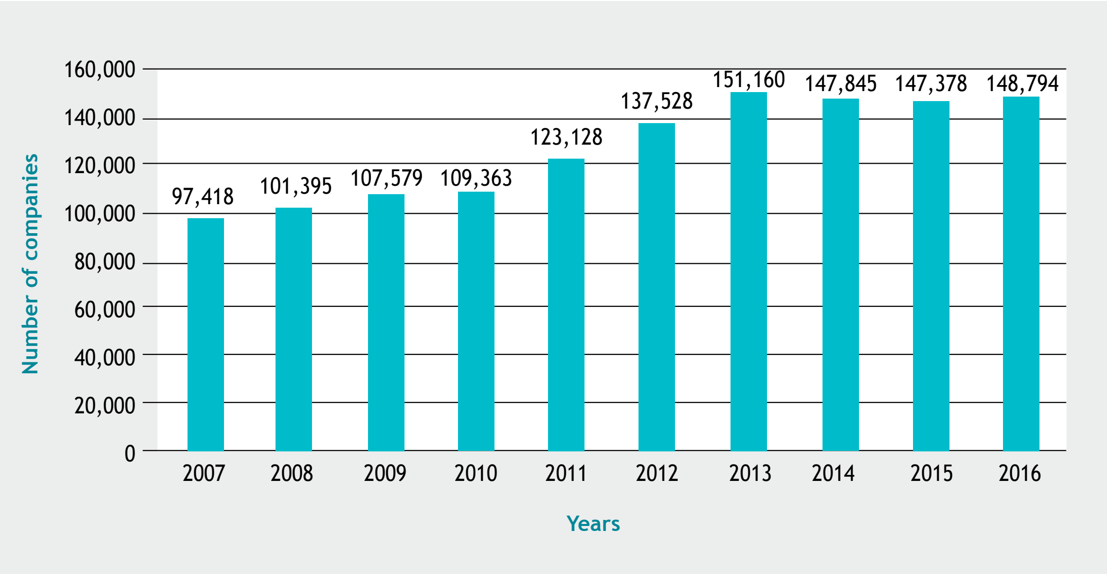
Spain holds 42nd place in the world for the low investment in R&D made by its companies, the low level of collaboration between companies and universities and the negligible production of advanced technological products by the public research sector

First of all, the reduction of labor and non-labor costs should be emphasized. According to the OECD, "in the five years between 2011 and 2016, unit relative labor costs (for Spain) have reached 1998 levels. In this sense, 60% of the improvement in competitiveness is the product of a slower growth in labor costs than of its commercial partners" (Fernández, 2016). The reduction in these costs has led to a relative cheapening of national products that has favored Spanish exports and discouraged imports (Linde, 2015).

Secondly, the fact that during the economic crisis that began in 2008, Spanish companies suffered a decline in domestic sales is also of great importance, since they were forced to turn to international markets in order to survive. Proof of this is that, according data from the ICEX (see Table 6), before the crisis, in 2007, there were 97,418 exporting companies and in 2016, there were 148,794 companies, for an increase of more than 50%.

Table 6

Number of Spanish exporters



Source: ICEX (2017).

Thirdly, we must also consider the factors that the WEF indicates as important for the competitiveness of Spain: infrastructures, health, higher education, technological maturity and the granting of patents. These foundations supporting our competitiveness compensate for the low level of innovation.

Spanish infrastructures also enjoy a high level of development (roads, airports, high-speed trains, etc.), which facilitates and reduces the price of goods transport, promoting exports. The good health and high level of education are related, as both seek to improve the quality of life, the physical conditions and professional preparation of the workers (Mankiw, 2012). The technological maturity indicates the capacity of the companies and Spanish workers to adapt quickly to technological advances, which along with the capacity to generate patents, increases competitiveness. All these factors are enabling the level of competitiveness of the Spanish economy to increase considerably.

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In Spain in 2007, there were 97,418 exporting companies and in 2016, this figure ascended to 148,794 companies, an increase of more than 50%

In summary, in spite of the low level of investment in R&D, the Spanish economy is increasing its exports, among other things, thanks to the reduction of costs, the decline of the Spanish domestic market during the economic crisis and its international position in factors such as infrastructure, health, education and technological maturity.

6. Final reflections

Twenty-five years ago, the OECD defined competitiveness as "the degree to which a country is capable, under free market conditions, of producing goods and services that pass the test of international markets, while maintaining and increasing the per capita income of its population over the long term" (OECD, 1992). Spain complies with the test of selling increasingly more abroad and since 2014, its per capita income has been increasing, as seen in Table 7. However, the OECD (see section 2 of this work) has recently opted to define the competitiveness as the advantage or disadvantage a country has in the sale of its products in international markets (OECD, 2014).

In any case, an increase in competitiveness means an increase in productivity, which will lead to economic growth, and therefore higher income levels (Cann, 2016).

Table 7
Annual variation in per capita GDP

Year	Per capita GDP	Annual variation in per capita GDP
2017 (forecast)	€24,900	3.30%
2016	€24,100	3.40%
2015	€23,300	2.30%
2014	€22,780	1.20%
2013	€22,518	−0.20%
2012	€22,562	−1.50%
2011	€22,900	−1.30%
2010	€23,200	−0.40%
2009	€23,300	−4.10%
2008	€24,300	1.70%
2007	€23,900	5.30%
2006	€22,700	6.60%
2005	€21,300	6.00%

Source: INE (2017).

Since the beginning of the crisis in 2008 until 2016, Spain has achieved continuous growth in its exports. This growth in exports is the product of the continuous struggle to improve competitiveness. These numbers, in spite of being very positive, conflict with the low level of investment our country makes in R&D. For this reason, Spanish companies must not be content with the improvement of recent years and must seek continuity in the improvement of its competitiveness.

The examples of the United States and Germany, whose competitiveness and world export shares have increased in recent years, thanks to the improved quality and quantity of technological innovation, must serve to illuminate the path that Spanish companies must follow to achieve greater economic growth over the next few years. The future of our competitiveness must be marked by investment in innovation. Therefore, only those companies whose

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production is accompanied by a highly technological component have a future. The era of competitiveness based on low prices should be a thing of the past.

In this sense, "the growing investments in computer equipment, or investments in R&D or technical training reveal the increasing importance of knowledge and information management in the economic development of countries" (González, 2016).

Therefore, in spite of the positive results in exports, Spanish companies must make a larger investment in R&D, an effort that will be compensated over the long term, as it will make it possible to improve competitiveness and continue with the growth of exports.

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https://doi.org/10.3926/hdbr.136

Main Differences Tax under IFRS Framework in Colombia

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Received: January, 2017.
Accepted: April, 2017.
Published: December, 2017.

Title
Main Differences Tax under IFRS Framework in Colombia.

Abstract
With the implementation of the International Financial Reporting Standards (IFRS), the product of the convergence process towards international standards in Colombia, differences between the accounting and financial information and the tax base or fiscal information, as it is known, must be presented. The consequences of said differences will be reflected in the deferred tax and in a new approach to the presentation of financial and accounting information for decision-making within companies in the country, which reasonably reflects the economic situation to the Federal Government. Through this bibliographic-type research, it can be concluded that, during the period of transition in the process of implementing the IFRS in Colombia, several systems of information must be managed at the same time, one under the Generally Accepted Accounting Principles in Colombia (COLGAAP, according to its initials in Spanish), another under the IFRS, and a final system according to the legal parameters of the Tax Statute. Once the implementation of the IFRS begins, at least the latter two will be required to be kept, which will result in an increase in the differences between them. It will thus be necessary to explain the evolution of the business and the changes in figures, as well as their effects on the applicable measurements and policies.

Key words
IFRS, COLGAAP, deferred tax, differences.

1. Introduction

This study refers to the differences that will increase with the implementation of the International Financial Reporting Standards (IFRS) as compared to the Colombian tax regulations, characterizing the most important aspects throughout the history of the tax regulations in Colombia to foster interest in the study of the IFRS and the changes that they will bring about for Colombian accounting. A brief explanation is given of the regulatory basis for the international and tax standards, in order to serve as a basic guide indicating to public accountants the work that must be done after the implementation of these international standards.

Due to the fact that international accounting standards are a new topic in Colombia, the need has arisen to begin to become familiar with them; there is nothing better than to examine them from the tax influence on accounting, since there is a clear autonomy between the two information systems.

There are notable gaps in tax procedures with the implementation of the international accounting standards. Mention is made of keeping accounting information in such a way that it satisfies the different state entities that regulate it, but yet the list of the most common differences that companies must handle, temporarily or permanently, is still being analyzed, stemming from the reconciliation between accounting income and tax income. It is important to know the differences that will result from this process, in order to be prepared for the fiscal effects. IAS 12 recognizes the obligation to pay income taxes during the same period in which the income and the expenses are registered on the financial statements, when the tax payment and any differences that arise must be recorded. This IAS recognizes the deferred tax for tax losses that have occurred in a certain period if there is enough tax income in the periods prior to the generation of the loss. This possibility would not be applicable under current tax legislation, as it does not allow tax losses to be compensated for with income from previous periods. This IAS would only be applicable to income tax and not to income tax for equity (hereafter referred to by its Spanish initials, CREE), given that the income tax is based on profits or earnings and the CREE only takes into consideration income.

The aim of the study is to gather all the information possible and present a critical analysis based on the writings, opinions and experiences of various authors to provide a basic textual compilation of cases that can be presented. To do this, international and tax regulations are cited that are subject to analysis and the work ends with a personal critique of the topic. Likewise, the intent is to benefit all accountants who will be responsible for the convergence processes, as stipulated by Law 1314 of 2009. Knowing the future of the deferred tax ahead of time gives us an accounting projection and rationale for managing the IFRS and it will enable us to know beforehand about accounting events based on this technique. All of this corresponds to the impact on tax matters that the federal government itself will exercise in two different ways: the convergence towards international standards and the responsibility to maintain harmony between the taxation and accounting.

2. Background information underlying the IFRS in Colombia

Colombia entered the economic globalization process in the 1990s, which has led to the need to generate financial information with characteristics similar to those of the countries already involved in this process, thus providing transparency and reliability to the users of this

The IFRS will change the accounting treatment (recognition, measurement, presentation and disclosure) of economic events

information. The globalization process is broadly related to the convergence towards IFRS, which allow economic events to be recorded with greater conceptual depth, reveal the true situation of the company at the present time and change the accounting treatment of the economic events in four aspects: recognition, measurement, presentation and disclosure (López Ávila & Zea Lourido, 2011).

However, this convergence has encountered tax legislation and its method of calculating taxable net income. For tax effects, Decree 2548 of 2014 has established that this should be done based on Decrees 2649 and 2650 of 1993, during the four years following the start of the application of the IFRS in the different groups, which were previously defined for the application of the standards in the area of accounting: for Group 1, the application of the full IFRS and for Group 3, simplified accounting, starting on January 1, 2015 until December 31, 2018; for Group 2, the application of IFRS for SMEs, starting on January 1, 2016 until December 31, 2019, generating differences that must be recorded as indicated by Decree 2548 of 2014.

The above has generated concern and the desire to identify these differences, which must be known beforehand in order to deal with the fiscal periods defined by the current Decree 624 of 1989, referred to as the "Tax Statute," while waiting for the Colombian National Customs and Tax Administration (hereafter, DIAN, according to its initials in Spanish) to decide what actions to take with regard to this convergence. The hope is thus that there will be a nexus between both sets of regulations: taxation and accounting.

At this point, it is important to cite Article 4 of Law 1314, of 13 July 2009, which indicates the following: "Independence and autonomy of tax regulations from those pertaining to accounting and financial information. The standards issued in the development of this law will only have a tax effect when the tax laws specifically refer to them or when said laws do not regulate the subject." This enables us to confirm the separation between the accounting information and the tax system.

3. History of accounting and taxation in Colombia

Accounting and taxation have evolved over time in Colombia. Below is a brief summary of this evolution.

3.1. Accounting

In the 15th century, the Spanish Crown set up a group of accountants who were in charge of reviewing the income and rights of those who had under their power any type of operation in the territory of New Granada. This group of accountants reported solely to the Crown, which was very different from what happens today, as accountants receive no support from the federal government, but are responsible for overseeing taxes, attesting to and supervising the income of merchants; i.e., the accountants in our companies do not depend on the State, rather they are responsible for the taxes of those they are representing in accounting terms.

These accountants in the 15th century kept a simple record of debts, taking sworn statements from those responsible and making inventories of the stocks of royal houses at the end of the year. Those who exploited the native and black populations did not keep accounting records. The only ones who did were the Jesuits, who served as a clear example of how to implement an organized accounting system, recording single line items in their ledgers and keeping a strict control over inventories and other assets. The books that were kept during this period were on the branches, purchases, sales, raw materials, third-party deposits, workers, and the Libro

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Accountants must take responsibility for the taxes of those they represent in accounting terms

Secreto ("Secret Book"), which is where the associations and earnings were recorded (Franco Ruiz, 2012).

In Colombia, the double-entry bookkeeping system arrived through the intermediation of the Spanish Court in 1923; in response to the recommendations of Edwin Walter Kemmerer, Law 42 was issued, which organized the national accounting system. In 1904, Decree 1936 was issued, which introduced the General Ledger Report, divided into folios, on which each folio page was divided into 9 columns, for both credits and debits. Decree 2160 of 1986 regulated commercial accounting, thus constituting the first generally accepted accounting principles in Colombia. Later, this decree evolved and was replaced by Decree 2649 in 1993, with which the Colombian accounting standards were harmonized with the international accounting standards issued by the International Accounting Standards Committee (IASC), which remain in force today. This decree, unlike all the previous decrees that regulated accounting, unifies all aspects related to the presentation of financial statements, unifies the records and filings, establishes the qualities of financial information and basic standards[1] and contemplates the possibility of reflecting economic events using the so-called higher standards[2], even in the event that they do not reflect the real economic situation, with the only requirement being that this be stated in the notes of the financial statements. The recognition of the economic events is based on their economic reality, emphasizing the need to generate information that satisfies the different users and establishes the objectives, the hypotheses upon which they are based, the qualitative characteristics, the elements, recognition and measurement and the capital items. This decree needed to be applied by all entities and individuals that were legally required to keep accounting records. Their application was also necessary for those who, while not required to keep accounting records, intended to use them as a means of evidence (Contaduría General de la Nación, Textos de Contabilidad Pública, 5, 15-25).

Today the International Financial Reporting Standards have been implemented in Colombia through the issuance of Law 1314 of 2009, thus writing a new chapter in history. This Law has been regulated by Decree 2548 of 12 December 2014 and the concept of the National Customs and Tax Administration (DIAN) No. 16442 of June 2015, explaining matters related to the differences between the accounting information and the tax system. There is currently the Single Regulatory Decree (DUR) 2420, of December 2015, which compiles the entire regulations issued on accounting standards and financial information and the assurance of quality; therefore, all the aforementioned decrees are included under it.

3.2. Taxation

The tax collector from the Spanish Crown was the accountant, who was a higher level civil servant appointed by the Crown itself through the Royal Audience in Santa Fe. This accountant kept control through other private tax collectors who would render accounts from the accounting ledgers, in which the entries for each transaction must be evidenced by a receipt for each credit or debit. One of these private tax collectors was Antonio Nariño, to whom the church hierarchy gave the power to collect tithes and then pass on part of this tax to the Crown. The half-yearly tribute ("*media anata*"), *alcabala*, king's fifth ("*quinto real*"), church allowance ("*mesada eclesiástica*") and windward fleet tax ("*armada de barlovent*o") were taxes that existed during this period (Contaduría General de la Nación, Textos de Contabilidad Pública, 5, page 17).

[1] Set of guiding principles, concepts and limitations that serve as the basis for and underwrite the accounting information so that it has the qualities to properly meet its objectives.
[2] Higher rank standards that can modify, repeal or replace those that come after them in the hierarchy.

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The IFRS are implemented in Colombia by Law 1314/2009, writing a new chapter in history

Between 1984 and 1991 there was a modernization of the tax system and structural regulatory changes were presented, such as overall adjustments for inflation, the extension of the VAT or value added tax and the expansion to include all payment concepts for withholding at the source, among other aspects. The period between 1991 and 2002 is marked by the issuance of the 1991 Constitution, the implementation of six great tax reforms, with an average of one every 18 months, not counting the exceptional emergency economic decrees, one from each government, which generated a great deal of uncertainty, given that all these reforms were simply intended to generate greater tax collections. From 2003 to 2009, a reform was adopted that had the essential lines of expanding the base of declarants, strengthening the information system to take advantage of the technological evolution and creating a financing scheme to expand the defense and investment budget (Departamento Nacional de Planeación, 2003, page 17).

From 2009 to date, there has been a process of policies enacted to establish agreements in order to avoid double international taxation with more than twenty countries, which has evidenced the need for greater tax planning through a more judicious legal interpretation. The decisions on the double taxation related to income tax and consumption tax were also updated in the Andean Society; today information can be exchanged with several countries to determine tax evasion and find evidence of drug trafficking and money laundering.

The tax system has undergone several reforms and modifications in recent years, which have noticeably increased the collections as a result of the level of participation; with this, the intent has been to create a fair, equitable, progressive and efficient system that has resulted in frequent changes, making the legal framework a patchwork quilt that creates legal uncertainty. More than a dozen tax reforms have been approved in Colombia, at the rate of almost one per year, including Law 1111 of 2006, which lowered the income tax rate and slightly extended the VAT base, but kept the general rate at 16 % instead of raising it. However, public spending was further increased.

Colombia has made a major effort to extend personal income tax collection to the middle levels that for a long time were not included under the mandatory requirement to present income tax returns. A number of deductions and exemptions or tax relief measures for taxpayers were also presented, with the intent of developing and sustaining industry. Unfortunately, however, these have not been the basis of business decisions.

4. Legal foundations

In Colombia, the implementation of the IFRS on a legislative level has been an overly slow process. Law 550 of 1999, in Article 63, entitled “Harmonization of international standards,” established the revision of our internal regulations to adapt them to international parameters and to make the pertinent changes. At the end of 2003, taking advantage of the fact that Law 550 of 1999 was still in effect, the National Government, through an Interinstitutional Technical Committee consisting of the Ministry of Public Finance, the DIAN, the Banking, Securities and Companies Superintendency, the General National Accounting Administration (Contaduría General de la Nación) and the National Department of Planning (Departamento Nacional de Planeación), prepared an Economic Intervention Project that was intended to, among other things, adopt international accounting and auditing standards in Colombia by early 2006, and presented it to the public for discussion.

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The constant reforms of the Colombian tax system generate a great deal of uncertainty

Said project received thousands of rebuttals in 2004, and was thus postponed. Later, with the entry into force of Law 1116 of 2006, the National Government was empowered to propose modifications to Congress on the topic of international standards when it deemed it appropriate starting on that date, giving it an indefinite period of time to study the IFRS. Finally, Law 1314 of 2009 was issued, which reached Colombia with several demands; among these, it regulates the convergence of national accounting standards to international standards, establishes that the Technical Council of Public Accounting (Consejo Técnico de la Contaduría Pública, CTCP) is the only agency authorized to propose standards and establishes 2010 as the deadline for the start of the process.

Until now, the aim has thus been to unite the two parts and articulate them: the internal regulations (COLGAAP) and the international standards (IFRS), to comply with and fulfill the desire for market globalization and private corporate growth.

The DIAN, in turn, has its own Decree, 624 of 1989, through which the taxes administered by this agency are issued; it is accompanied by an unlimited number of modifications, cancellations, amendments and substitutions. Law 1314 of 2009 defines the Tax Statute as articulated totally independently of Decrees 2649 and 2650 of 1993, which will be used by the DIAN as the only Decrees to back the tax burden for all those required to declare; in this scenario, the DIAN has won important ground in the area of information and has placed many taxpayers in a tight spot with the so-called "offsetting of accounts." It states that it will take it four years from the application of the IFRS-IAS to analyze the impacts on taxes and thus determine legislatively how to proceed, as set out in Article 165 of Law 1607 of 2012.

On December 12, 2014, Decree 2548 (Ministerio de Hacienda y Crédito Público, 2014) was issued, which regulates the IFRS and suggests keeping a tax ledger or reconciliation of the differences between tax figures and those generated by the IFRS, in order to use all records, according to the regulations, as a means of support for the tax declarations. This procedure will be carried out until 2019, given that the DIAN will take this time to establish the repercussions and propose new tax regulations, together with the CTCP and the Ministries of Public Finance and Public Credit and Commerce, Industry and Tourism, which are responsible for issuing the legislative measures. This Decree also establishes the dates on which the COLGAAP must remain in effect for each of the groups in which Colombian companies were divided. This applies to Concept 16442 of June 2015, the tax bases of which must remain unchanged and established only for tax effects; in terms of the differences that are generated in accounting and tax matters, this concept considers that the taxpayer cannot lose control and that taxation must be able to be linked to its origins, and therefore a system of mandatory records and a tax ledger was decided upon.

5. Differences between taxation and the IFRS-IAS

An important part of accounting is dedicated to complying with tax obligations, starting with exogenous information, including all the taxes and ultimately ending with the tax return; this demonstrates the total tax influence on accounting. The IFRS are based on financial principles that do not totally agree with our tax model. This situation creates differences that range from the items that make up the cost of goods up until the moment the economic events are recognized.

Table 1 shows some of the differences between accounting and tax issues.

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Table 1
Differences between accounting and tax issues

ASPECT	IRRS-IAS	TAX REGULATIONS
First-time implementation (Section 35 and IFRS 1)	According to the measurement and recognition criteria, there are resulting tax effects that merit being evaluated by the migration of the entries that make up the financial statements, as in the case of assets whose cost must be reassessed, the outflow of resources in the case of estimated and contingent liabilities or a future event that may be uncertain and that ends up being recognized as a real asset. The first-time adoption will derive in a profit or loss; if it is a gain, it will not become more than a theoretical gain that cannot be distributed, and if it is a loss, it will create an unavailability of cash flow, which will suddenly not exist. The implementation requires the creation of accounting policies and, therefore, the exploration of a world that is completely different from the traditional one; it is thus possible for the standard to be misinterpreted, leading to errors.	They can potentially impact the taxpayers' liquid assets in a significant manner during the first year of adoption, a situation that would undoubtedly affect the determination of income by the presumptive income or new equity taxes system (Andrade, 2012, page 1). The return will be presented based on tax regulations in which the IFRS will not be taken into account, which will create a large line item to be reconciled between the value of the tax provision and the real tax. This means that the act of transferring entries from assets or liabilities to the retained earnings account generates differences that can increase or decrease the presumptive income.
Changes in accounting policies, selection of accounting policies, accounting estimates and errors from previous periods (IAS 8 and Section 10)	In the case of the reassessed cost of assets, the international standard uses the asset reassessment criterion, but taxation would not take this reassessment into account, which would be called a revaluation of assets. That said, taxpayers can declare the valuation, but for the purposes of occasional gains, it would not be accepted as a fiscal cost and for the purposes of presumptive income and equity tax, it would not be prudent to do so.	Certain policies may not be included, such as, for example, choosing a valuation of current and non-current assets that is different from those mentioned in the Tax Statute. The fiscally revaluated value criterion is considered as an expectation; for this reason, it is not declared.
Valuation of financial instruments (IFRS 9, IAS 39 and Sections 11 and 12)	The valuation is carried out taking into account the amortized cost or even the fair value. The fair value measurement (IFRS 13) is the most commonly used basis for measurement or recognition in the international standards, which modifies the values or accounting bases, creating a deferred tax.	Its recognition is given according to net value or agreed cost or value. It differs from the concept related to the income, which refers to a cost, but a historical one.
Recording of portfolio provisions at the time of implementation	The policies for the portfolio provision change in relation to local regulations. A portfolio record contrasted with retained earnings will be generated.	Only general and individual provision methods are accepted, creating another difference that will have an impact on the entity's deferred tax.
Valuation of inventories (IAS 2 and Section 13)	The interest and the implied interest and the difference, on the other hand, will be recorded as expenditures. The discounts on purchases are subtracted from the inventory value. The inventory is recognized upon the arrival of the physical goods, which means that it will be recorded once the goods are in the warehouse.	Interests and exchange differences form part of the cost. These concepts are recorded as income. The inventory is recognized with the invoice.
Combination of businesses	It is necessary to bear in mind that the acquiring company must recognize the assets, liabilities and contingent liabilities of the acquired company at their fair value, which would be the same as the market value.	It is recorded according to book value or historical fiscal cost.
Joint businesses (IFRS 11 and Section 15)	These are recorded according to the proportional consolidation method; i.e., the recognition on the financial statements of each party to the contract corresponds to the portion of assets, liabilities, income, costs and expenses associated with the joint business contract or, alternatively, the share method.	It is not indicated how to do this; in other words, there is no tax rule that regulates this.

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Table 1 (continued)
Differences between accounting and tax issues

ASPECT	IRRS-IAS	TAX REGULATIONS
Assets held for sale (IFRS 5)	These assets must be classified and presented on the financial statements separately from the other assets; in addition, they neither depreciate nor are amortized.	These assets must be depreciated according to Article 134 of the Tax Statute. In this case, the tax regulations are very generous, permitting them to be calculated by any technical system of recognized value authorized by the assistant director of taxation of the tax administration or his delegate.
Measurement of property, plant and equipment (IAS 16 and Section 17)	This must be carried out while taking into account the cost model, which consists of its initial cost, minus the accumulated depreciation and the amount corresponding to impairment. In the Full IFRS, an alternative treatment is provided called the revaluation model, which consists of the fair value minus the accumulated depreciation, less the amount of accumulated impairment.	There is a procedure similar to the cost model that is disaggregated according to the acquisition cost or initial recognition, plus adjustments for inflation prior to the date on which they took effect, minus the accumulated depreciation, plus the fiscal readjustments. The valuations are not declared.
Useful life	The useful life corresponds to the period in which the depreciable asset is expected to be used by the company.	It is the period during which the use of the assets is recognized, which is established by Article 70 of Decree 187 of 1975; according to the foregoing, a distinction must be made between the useful life for accounting and tax purposes, with the former being determined technically, and the latter as indicated by the regulation or authorized by the director of the DIAN.
Depreciation	This will have to be replaced by a method other than that established by the fiscal authority, which is generally the straight line method. It must be changed to a method that actually incorporates the wear and the contribution made by the asset to the generation of income.	The already established methods will not change.
Dismantling of properties, plants and equipment	The estimated value for dismantling forms part of the cost of the property, plant and equipment and must be recognized from the time of initial recognition, offset by an estimated liability, thus affecting the value of the depreciation in future periods.	This dismantling is not an accepted liability, because it is estimated.
Leases (IAS 17 and Section 20)	For the case of financial leases, the recording of the property as an asset must be done by the lessee, who must depreciate the asset, while the lessor records it in accounts receivable. This means that the essential risks and benefits are transferred from the leased asset.	The cost will be integrated in the value of the lease payment and will never be the property of the party making the payment until that right legally exists.
Revenues (IAS 18 and Section 23)	The revenue occurs when the good becomes physically available and the collection right is created. The concept of revenue does not include the exchange or trade for goods or services of a similar nature; this type of exchange is not considered as ordinary revenue. Revenue with financing or implied interest refers to the sale with a period greater than that provided according to the normal conditions of negotiation for collection. This value must be recorded at fair value, which implies separating the implied interest, recording the revenue on one hand and the monthly interest value on the other. The income would be the cash value and the financial revenue or financial cost would be the value or difference between the final perceived value and the initial value of the sale. The credit value is understood to be different from the cash sales value.	Currently, the value to be recognized is the historic value, i.e., the value agreed by the parties, and it is recognized once there is a sales invoice and the date of the invoice is when the revenue is recorded. The problem that can arise in relation to the IFRS is the cut-off at the end of the month.

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Table 1 (continued)
Differences between accounting and tax issues

ASPECT	IRRS-IAS	TAX REGULATIONS
Interest on loans to employees	They must be recognized even if nothing has been agreed in this regard.	This interest does not meet the requirements to be considered as revenue, so there is no recognition.
Differed tax	This exists when future effects are presented on earnings taxes, derived from the different treatment that is presented between the commercial accounting and the tax bases: they are treated through the balance approach or liability method, through which the temporary differences are recognized that arise in the valuation of an entity's assets and liabilities, in addition to those occurring to the income, costs and expenses; in other words, all transactions with future effects are taken into account.	It only recognizes temporary differences that arise from the recognitions and measurements that are different between the taxation and the commercial accounting of the revenues, costs and expenses, i.e., the profit and loss accounts.
Deferred tax accounting	The liability method (AIS 12) bases its logic on the statement of financial position: the financial statements must reflect the current and deferred tax implications of all events that have been recognized on the financial statements or tax returns.	According to Article 67 of Decree 2649 of 1993, the effect of temporary differences that imply the payment of a larger tax in the current year must be recorded as deferred tax debits, calculated at current rates, whenever there is a reasonable expectation that sufficient taxable income will be generated in the periods in which said differences will be reversed. The deferred tax must be amortized in the periods in which the temporary differences that originated it are reversed; when it is a minor tax to be paid in the current year, it must be recorded as a deferred tax owed, calculated at current rates whenever there is a reasonable expectation that said differences will be reversed. Decree 2650 of 1993, PUC for Retailers, within the description and dynamics of account 1710, Deferred Charges, indicates that the deferred income tax must be recorded in this account as a debit, caused by the temporary differences between the commercial profit and the fiscal liquid income by virtue of the non-deductible nature of some of the accounting expenses.

Source: author's own work.

6. Conclusions

The set of rules or tax regulations have the purpose of collecting taxes, a goal that is totally different for the businessman, who wants to know his real financial position, earnings, liquidity, cash flow based on the recognition of figures adapted to a set of rules imposed by the federal government through its competent entities in charge of transmitting to the merchant the pertinent regulations to prevent informational chaos. Here is where the differences are created, that can be either permanent or temporary. In Colombian taxation, the concept of "temporary differences" exists, but what exactly is meant by "temporary differences" has yet to be defined. Therefore, on many occasions, companies do not calculate this or record this value. Those companies that do record it do so in order accounts that do not affect the company's financial position. However, with the IFRS, the financial statements should be affected, generating great changes in the profits to be shown by the companies.

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An important part of accounting is dedicated to meeting tax obligations

During the first four years the IFRS are applied, taxpayers must prepare tax returns with the accounting figures from Decrees 2649 and 2650 of 1993, in spite of the fact that the Tax Statute has its own regulations for tax collection; nonetheless, the data provided by the aforementioned decrees are used as a point of departure. The accounting figures according to the IFRS and those figures originated for tax effects must then be reconciled, and so a tax ledger or other system to record the differences must be kept, according to the provisions of Decree 2548 of December 2014. If the DIAN needs to audit anything between the years 2015 and 2019, it will do so with the accounting figures according to the accounting framework in force until December 2014 for Group 1 and December 2015 for Group 2, which is to say according to Decrees 2649 and 2650. The DIAN will not accept the presentation of accounting figures for tax purposes that are obtained according to the IFRS. These new frameworks will be used solely to generate accounting figures that will be used for all other purposes; for this reason, Decree 2548 established two options for the way in which taxpayers can comply with the IFRS and at the same time with the accounting figures for tax purposes: one of them is the "tax ledger," which will be a special book within the accounting records to record all base operations for tax purposes, which is not mandatory; the other option is to keep a record of the differences.

The IFRS are a means of communication between the country and businesses as a whole. There are some companies that have worked with these standards for some time now, since they form part of a multinational company to which they must send reports with international characteristics. These standards better reflect reality than Decree 2649 of 1993; this is simply an appeal to the federal government to analyze the rules it uses to collect taxes. Article 632 of the Tax Statute establishes a period of five years to keep for tax purposes any accounting ledgers and other documents that support tax returns. That said, if the international standards are closer to reality, the tax collection must also be based on real information. While the tax part is being standardized, we will have to keep a tax ledger or a record that identifies the differences that are presented from period to period with the accounting part according to the IFRS, as there must be something to support the tax in the case of an inspection by the DIAN.

Colombia will need to copy models from counties that have the same tax situation, although it is doubtful that this can occur, since Colombia has a tax that is too varied, generating great tax stability, which can be perceived in the constant changes that are carried out, the emergence of new taxes and the tax changes that are woven by practically every government, because the reality is that every time there is a new government, there are new taxes or the extension of them. Their regulations are late in coming, they are increasingly high and the responsibility falls on a greater share of the population. Their interpretation also becomes complex; in short, these result in difficult situations for investment and decision-making in Colombia.

With everything set out so far, this work leads us to conclude that a very large burden is on the way for public accountants and managers, since the IFRS have permanent changes, as do the tax regulations. There is therefore the risk of reaching a critical moment in which the information will be bounced around in such a way that it will be impossible to know with any certainty which figures to use to plan the tax strategy.

In order to manage to comply with the Government's requirements according to both the IFRS and the tax regulations, companies will have to increase their administrative costs, since they might need more than one accountant per company, unless this work is assigned to a single person, as the fact of the matter is that both information systems must be handled separately, since Law 1314 of 2009, in Article 2, makes the public accountant responsible to the federal government, while on the other hand is the public trust that the professional accountant owes in terms of tax matters on the tax returns.

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The changes that will come about as the result of the implementation of the IFRS will affect everyone

The process of implementing the IFRS implies the setting of software parameters, which will require businesses to operate simultaneously with both systems of regulations. The accounting work and administrative costs will both increase, given that staff must be trained and made aware of the change. However, this process also represents an opportunity for companies to get their accounts in order, to eliminate any errors that have been made when getting figures to balance and to obtain clarity on what they own, as accountants are forced to become financial managers instead of simply bookkeepers.

The changes that are going to be generated as the result of the implementation process for the IFRS do not apply only to retailers and businesses, but also to the DIAN, which must revamp the Tax Statute, making it more comprehensible and transparent, as the law must not lend itself to interpretation, rather it must be as clear as possible. These are the challenges that must be faced, welcoming the change and the differences that are generated between the IFRS and the tax regulations. Over time, the burdens will ease and Decrees 2649 and 2650 of 1993 will go down in history as just another era in accounting.

Finally, as of the date of publication of this article, the country has a tax reform on the table, which has been called "structural." The proposal is to eliminate the four years in which Decrees 2649 and 2650 of 1993 will be in effect and transition over to the IFRS more quickly than expected. Once of the initiatives is also to begin to use the language of the IFRS in order to close the gaps in relation to the terms used and generate an environment for the study of what might be substantial modifications and eliminate any gaps or confusion that end up resulting in tax evasion. In other words, Colombia is faced once again with a tax reform and it will surely not be the last, as no data are available about the changes on the financial structure of SMEs, which represent a large group and thus a critical mass to review and oversee in terms of taxation.

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https://doi.org/10.3926/hdbr.65

Levels of Internationalization of Multinational Spanish Firms: The Role of the Amount of Committed Equity and the Managerial Attitudes toward Foreignness

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Received: October, 2014.
Accepted: September, 2017.
Published: December, 2017.

Title

Levels of Internationalization of Multinational Spanish Firms: The Role of the Amount of Committed Equity and the Managerial Attitudes toward Foreignness.

Abstract

In this study, we investigate how the level of equity invested in foreign ventures and the orientation of the senior management team towards foreign cultures and international markets influence the degree of internationality of multinational Spanish firms. We postulate and empirically illustrate that a geocentric approach (based on a global mindset that remains perceptive to local differences) is associated with a higher level of internationalization. Conversely, modes of entry that imply a greater commitment relative to the equity investment made in the host country, such as the creation of wholly owned subsidiaries, are not necessarily related to the highest degree of internationality. In the current international scenario, the flexibility offered by the establishment of international alliances that imply a lower commitment of equity investment in the foreign country allows for the optimization of the investment made and a significant increase in the level of internationality.

Key words

Internationalization; multinational enterprises; manager attitudes; entry modes; centricity.

Acknowledgements
I appreciate the encouragement, support and inspiration of Professor Paul Beamish from Ivey Business School, Western University, London, Ontario, Canada.

Both the globalization of national economies and the growing internationalization of companies have become increasingly present over the last thirty years

1. Introduction

The attitude, perception or mentality that the chief executive or the top management team (hereafter, TMT) of a company has about foreign cultures and international markets has an important influence on the design of its internationalization strategy. These attitudes or visions "regarding foreignness" shape what in the management literature is known as "centricity."

Centricity, in other words, the centric profiles/orientation of managers and companies, has been a well-studied concept in International Business (IB), following the pioneering works of Perlmutter (1969a; 1969b; 1969c). This American author classifies businesses into four groups, depending on the centricity of the company's chief executive or TMT: ethnocentric, polycentric, regiocentric and geocentric companies (hereafter, referred to as the EPRG paradigm).

Both the globalization of national economies and the growing internationalization of companies have become increasingly present over the last thirty years. For the Spanish economy in particular, the severe economic crisis that began in 2008, with a significant drop in the domestic market, meant an additional push towards the internationalization of Spanish companies, which look abroad for new markets or to consolidate those already existing in other countries. In this sense, another relevant aspect in IB is in terms of the methods used by businesses to enter new international markets, given their consequences on performance and the success of the international operation. The different ways of entering the market are associated with a certain capital expenditure or commitment by the company, and accordingly, this capital investment will be larger or smaller in amount for the company, depending on the method selected (exporting, joint company, wholly owned subsidiary, etc.).

This work analyzes the extent to which the attitudes or mentalities of executives (the core members of the TMT) towards foreignness and the amount of capital expended in foreign operations can explain the degree of internationalization of Spanish companies.

The rest of the article is structured as follows: first is a brief review of the attitudes of executives towards foreignness and the main ways for entering new international markets, with the different capital investment needs that are associated with them. The following section briefly presents the database used, the variables and the statistical analysis carried out. The work concludes with a discussion of the results, the implications for executives and the final conclusions.

2. Attitudes of executives towards foreignness: the EPRG paradigm

By the *executive's international orientation, centricity* or *centric profile,* we are referring to the dominant attitude the chief executive or the TMT has towards cultures and markets different than their own. This attitude can be ethnocentric, polycentric or geocentric. Calof and Beamish (1994) define centricity in a more detailed manner, as the set of beliefs that are held about the international markets and cultures other than one's own, which have an influence on the different decisions made by a company, both strategic (the selection of ways of entering international markets) and operational (decisions related to production, marketing or human resources), that affect the performance of the company. The concept was introduced for the first time by Perlmutter (1969a; 1969b; 1969c), who initially applied it to develop a classification or typology of the North American companies that operated in international markets.

The geocentric orientation considers that there are global similarities between cultures and markets

Perlmutter states that the orientation, prevailing philosophy and attitudes of the TMT influence the type or method of internationalization ultimately chosen by the company. He classifies these executive orientations into three overall types of centricity, which in turn originate three types of international businesses: ethnocentric, polycentric and geocentric. Later, Perlmutter (1972) and Perlmutter and Heenan (1974) added a fourth form, the regiocentric company, leading to what eventually came to be known as the *EPRG concept or paradigm* (Schmid & Machulik, 2006; Isidor, Schwens & Kabst, 2011). These attitudes, which reflect the mentality of executives towards foreignness, are explained in simple terms below.

The ethnocentric mentality or attitude implies an orientation towards the country of the chief executive or the TMT. According to this orientation, the main decisions of the company are made at the company's multinational headquarters. The different foreign operations or subsidiaries lack their own autonomy. The TMT understands and interprets the foreign markets, other cultures and international business only through the lens of the values of its own country of origin. In this manner, decisions in the different areas of the company (human resources, finance, production and marketing) merely reflect the same policies and business practices of the country of origin and of the central headquarters. Therefore, according to an ethnocentric mentality, there is no local responsibility. Foreign employees and administrative practices are seen as "inferior" to the "national" ones or those found in the domestic market. For example, the key positions, in both the local and the foreign market, are assigned from the headquarters and to citizens of the same country as the parent company.

On the other hand, a polycentric attitude considers the subsidiaries as true independent entities, and they are given a high level of autonomy. The subsidiary is usually led by executives from the country in which it is located, who have few options to relocate to other subsidiaries or to form part of the administrative team at the headquarters (Roper, Brookes & Hampton, 1999). This mentality understands that the cultures of each country are different, so that each country is very different from the rest. Therefore, it is better for each foreign operation to be led by a citizen of that territory. This way, the different company policies tend to reflect the local practices of the country in which the subsidiary is located. Decisions tend to maximize local responsibility, implying that each country has its own strategy.

The regiocentric mentality is a variation of the polycentric, but with a regional scope (Europe, Latin American, Asia, etc.). Executives with regiocentric orientations recognize that there are similarities among the different countries that make up the same geographic region. This type of company performs its operations, integrates its activities and designs it policies on a regional level. Even the very structure of the company has a regional configuration. In each of the regions, the different international operations or subsidiaries are interconnected and governed by a regional center that acts autonomously and supports and directs the international subsidiaries in its region (Isidor et al., 2011).

Finally, the geocentric orientation considers that there are global similarities between cultures and markets. This mentality attempts to balance global practices with local ones, adopting policies that reflect and reconcile local differences and common global aspects. Best practices and global policies are adopted, but adapted to local conditions. The central headquarters and subsidiaries are integrated around the world and are highly interdependent on one another. For key administrative positions, both at the central headquarters and the subsidiaries, the most qualified executives are chosen, regardless of their nationality or country of origin (Isidor et al., 2011).

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The EPRG paradigm has also been used to analyze the company's internationalization processes, according to its two theoretical extremes: the gradual or incremental processes and accelerated processes of internationalization

Perlmutter's EPRG paradigm has had a strong influence and has been used in different areas of the IB literature since it first appeared. In particular, it has been widely used in the area of international human resource management. In this field, there are many contributions that have studied the relationship between the focus when hiring personnel for the subsidiaries (ethnocentric or polycentric) and the performance of that international operation or subsidiary (Konopaske, Werner & Neupert, 2002; Gong, 2003; Colakoglu, Tarique & Caligiuri, 2009). The EPRG paradigm has also been used to analyze the company's internationalization processes, according to its two theoretical extremes: the gradual or incremental processes and accelerated processes of internationalization. In this manner, Isidor et al. (2011) study the possible relation between the EPRG paradigm and the incremental process of internationalization described by Johanson and Vahlne (1977): the gradual emergence of exports, joint ventures, sales subsidiaries, and finally, wholly owned subsidiaries. At the same time, other authors believe that the geocentric mentality of the TMT is a key element to explain the accelerated processes of internationalization that are typical in the born global firms (Harveston, Kedia & Davis, 2000; Knight & Cavusgil, 2004; Weerawardena, Mort, Liesch & Knight, 2007, among others).

Ultimately, Perlmutter's EPRG typology is based on the observation that companies behave differently when they operate abroad. Its organizational behavior, and therefore, the type of EPRG configuration finally created would basically depend on the centric mentalities, orientations or attitudes held by the TMT. It would be these attitudes of the main manager or the TMT that would most directly affect the final orientation of the company or its centric profile, and not other aspects outside the company, such as the characteristics of the environment or the industry.

In terms of centricity, our work intends to find out whether a certain centric attitude or mentality on the part of the chief executive or TMT is associated with a greater degree of internationalization of Spanish companies already operating abroad.

3. The main modes of entering foreign markets

Following Sharma and Erramilli (2004), we can define the mode of entering a new market as the structural agreement that enables a company to implement a commercialization strategy for its products in a foreign country, either performing only commercialization operations (exports) or engaging in operations of both production and commercialization, by themselves or in association with other companies (contractual modes, joint companies or wholly owned subsidiaries). There are different modes of entering the market and different criteria for classification. Some modes may be contractual (dealers, franchises or licenses) or non-equity modes, while others might mean an investment of social capital or equity modes, a true extension of the company abroad: joint ventures, sales subsidiaries or production subsidiaries. The latter two modes may involve subsidiaries that are created in an ad hoc manner (green fields) or acquired through a merger or buyout process.

The selection of the most appropriate mode of entry into a new foreign market is a strategic decision of crucial importance to the company (Delios & Beamish, 2004; Tanganelli & Schaan, 2014). First of all, this is true because it has important implications for the company's performance. On the other hand, it will determine whether the company will have control and full ownership over the international operation. And furthermore, it is a decision with important long-term implications: once the entry mode has been established, it will be very costly to change it or make corrections to it, given the high costs implicit in a change.

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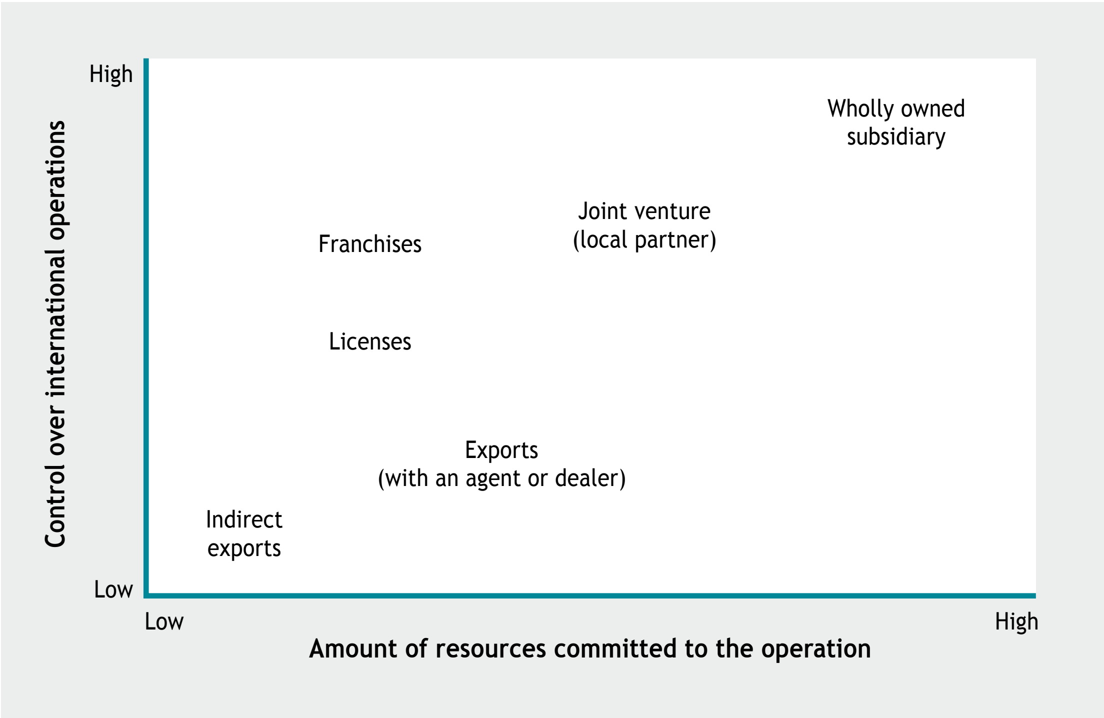
In this work, we will focus on the three main modes most frequently used for entering foreign markets: exports, joint ventures and wholly owned subsidiaries (Brouthers & Hennart, 2007; Morschett, Schramm-Klein & Swoboda, 2010). Table 1 summarizes the main modes of entry, according to the level of capital investment required (high or low) and the level of control that they allow over international operations.

Table 1
Main modes of entry according to degree of control and capital commitment



Source: author's own work, adapted from Bartlett and Beamish (2013).

Of these three basic modes of entry, exports (EX) do not imply participating in the share capital (as it is a non-equity mode), but joint ventures (JV) and wholly owned subsidiaries (WOS) do represent a capital commitment (as they are equity modes). Furthermore, in this context of capital disbursement, JV imply a smaller capital investment than WOS, given that, by definition, JV have at least one partner.

With regard to the mode of entry, we will first analyze whether the company is increasing or decreasing its capital commitment (equity) in its international activity. This will be done by observing the changes between one mode of entry and another. It is thus understood that changing from EX to JV or from JV to WOS implies an increase in the capital committed to the foreign operation, while a change from WOS to JV, from WOS to EX or from JV to EX implies a decreased capital commitment in the international operations in which the company is involved. We will then go on to analyze how increases or decreases in the capital commitment to the previously observed international operations affect the degree of internationalization of Spanish companies.

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The selection of the most appropriate mode of entry into a new foreign market is a strategic decision of crucial importance to the company

4. Sample, measurements and statistical analysis

4.1. Sample

The analysis was carried out on a database created from the results of a survey administered to Spanish multinational companies[1]. The questionnaire was designed to obtain the centric or attitudinal profile of the chief executive (or TMT) towards foreign markets and cultures, the different modes of entry used and different information about the company, on both an internal and a contextual level. 250 Spanish multinational companies were selected based on the information from the directories of the Higher Council of Spanish Chambers of Commerce and the ACICSA that met the following requirements: they had been in existence for at least 25 years, have participated in at least one international operation other than exports during the last ten years and are relatively medium-sized (no more than 800 employees and an annual turnover of up to €600 million). The questionnaire was administered in 2012; the response rate was 24% and the final number of complete valid responses was 45. These 45 companies together made 99 changes in modes of entry between the years 2000 and 2010, with the mode of entry serving as the unit of analysis. Only 5 of the 45 companies have between 500 and 800 employees; the rest have less than 500. In each case, among other aspects, information was obtained on the age of the company and its years of international experience, the different modes of entry it has used and the year of each change, the centric orientation/attitude of the chief executive (or TMT), its sector, overall turnover and international billing.

4.2. Measurements

To measure the degree of internationalization, the variable we are seeking to explain, we used the percentage of international sales as compared to total sales that occurred in 2011. This index, which varies between 0% and 100%, is commonly accepted as an indicator of the degree of internationalization of a company. We call this variable "Internationality."

In addition, different variables were designed to be able to determine the centric profiles of the chief executive or TMT, such as those corresponding to increases or decreases in capital commitment based on the three modes of entry analyzed (EX, JV and WOS). The variable "CapitalReduction" thus reflects the changes in the mode of entry that imply a reduction of the capital commitment with regard to the previous mode. Given the three modes of entry studied, this would correspond to the changes from WOS to JV, from WOS to EX or from JV to EX. The "ChangetoWOS" variable computes the changes in the modes of entry to WOS; therefore, these would be changes in modes of entry from EX to WOS or from JV to WOS. Likewise, the "ChangetoJV" variable reflects the changes in mode of entry to JV; i.e., from EX to JV or from WOS to JV.

The attitudes or mentalities of the chief executive or the TMT are reflected by the "Centricity" variable. This is an ordered categoric variable that is assigned a value of 1 if the attitude is ethnocentric, a value of 2 if it is polycentric or regiocentric and a value of 3 if it is a geocentric attitude or mentality. The score 1-2-3 is obtained from the questionnaire administered to the chief executive or TMT of each company. To obtain the type of attitude, the executive or TMT is asked to score the orientation or mentality taken in ten different types of business decisions, in such a way that the centricity is

[1] We understand "Spanish multinational companies" to mean those Spanish companies with headquarters in Spain that conduct operations in multiple countries.

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assessed based on how it is reflected in the main business decisions made by the organization over a period of ten years. Based on these scores and using weighted averages, the centric profile of the company is obtained, which reflects its attitude to foreign markets and cultures. Table 2 shows the part of the survey on centricity or the attitude of the executive towards foreignness.

Table 2
Portion of the questionnaire on the attitudes of the chief executive

For the following areas indicated below, please indicate which of the four focuses your company followed and which focus you think it should follow. Write 1, 2, 3 or 4. Do not worry if your answers do not seem to be consistent in all areas.

1 = Spanish focus; 2 = local focus; 3 = regional focus; 4 = global focus*

Decisions	How decisions are currently made	How decisions should be made
Capital expenses	( )	( )
Prices	( )	( )
Dividend distribution policy	( )	( )
Product selection or design	( )	( )
Production planning and control	( )	( )
Quality control	( )	( )
Marketing and sales policies and programs	( )	( )
Purchasing and supplier selection	( )	( )
Finance and accounting procedures	( )	( )
Selection and promotion of executives for subsidiaries	( )	( )

Extract of the survey given.

* *Spanish focus* is understood to be an ethnocentric attitude; *local focus* is a polycentric attitude; *regional focus* is a *regiocentric attitude;* and *global focus* is a geocentric attitude.

Finally, different control variables are also introduced: the size of the company in terms of the number of employees ("Size"); the age of the company or the number of years since it was founded ("CompanyAge"); its international experience, operationalized based on the number of years in which the company has been present in the international market prior to 2011 ("InternationalEx"); the sector, distinguishing the manufacturing companies ("ManufacturingInd"); and the propensity to change the mode of entry into the foreign market, assessed by the total number of changes made by each company ("NumChanges"). Table 3 summarizes the descriptive statistics of the variables used.

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Table 3
Descriptive statistics of the variables

Variable	Observ.	Mean	Standard dev.	Min.	Max.
Internationality	99	53.54	19.14	17.14	94.12
CapitalReduction	99	0.20	0.40	0.00	1.00
ChangetoWOS	99	0.33	0.47	0.00	1.00
ChangetoJV	99	0.12	0.33	0.00	1.00
Centricity	99	1.94	0.78	1.00	3.00
Size	99	288.58	197.43	85.00	800.00
InternationalExp	99	26.33	13.16	10.00	70.00
CompanyAge	99	61.63	29.90	21.00	131.00
ManufacturingInd	99	0.55	0.50	0.00	1.00
NumChanges	99	3.83	2.30	1.00	9.00

4.3. Statistical analysis

A multiple regression analysis was carried out using the OLS technique, or estimating the ordinary least squares, using robust standard errors that generate a more consistent estimate. This technique makes it possible to determine the influence of the independent variables described above on the independent variable, in our case, the internationality of the company. The coefficients of the independent variables will tell us, according to the sign, the increase or decrease in the propensity towards internationality as each of these variables changes. It is also demonstrated that there is no risk of multicollinearity among these variables. Table 4 shows the results obtained, which we comment on below.

Table 4
Summary of the statistical results

	Coefficients	S. e.
CapitalReduction	11.29*	4.71
ChangetoWOS	14.51***	3.57
ChangetoJV	10.48**	3.53
Centricity	3.94†	2.34
Size	–0.03***	0.01
InternationalEx	0.14	0.13
CompanyAge	–0.22***	0.05
ManufacturingInd	12.54**	4.55
NumChanges	–1.96*	0.83
Constant	56.7***	10.07
NumberObservations	99	
R squared	0.46	
F-value (9.89)	16.94	
Prob> F	0.00	

† *p*< .10
* *p*< .05
** *p*< .01
*** *p*< .001

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The fact that the size is increasingly less important in explaining greater processes of internationality is consistent with recent processes of rapid globalization in many small companies (born global firms)

5. Discussion of the results

The first three variables enable us to analyze how an increase or decrease in capital commitment in the changes in mode of entry used by the company affects its internationality. If we consider the three basic modes (EX, JV and WOS) as three values (0, 1 and 2, respectively), changes from 2 to 1, from 2 to 0 and from 1 to 0 would mean changes to modes of entry that imply a reduction of capital, while changes from 0 to 1, from 0 to 2 and from 1 to 2 would be changes to a new mode of entry that implies an increase in the capital commitment to the international operation. Analyzing the first three variables, we can conclude the following:

The coefficient of the "CapitalReduction" variable, which measures the reduction of the capital committed in the new mode of entry used, is both positive and statistically significant, so we can state that a mode of entry that implies a lower investment of capital positively affects the level of internationality. The "ChangetoJV" variable reflects a change from EX to JV or from WOS to JV and is associated with a positive and significant coefficient with a value of 10.4. Accordingly, a change from EX to JV is associated with greater internationality by the company, as occurs with a change from WOS to JV. On the other hand, the "ChangetoWOS" variable which would reflect a change from EX to WOS or from JV to WOS, is also positive and statistically significant.

If we consider altogether all the coefficients related to reductions of capital, some interesting results are observed. The reduction in capital represented by changing to joint ventures (changing from WOS to JV) implies adding the coefficients 11.3 from "CapitalReduction" and 10.4 from "ChangetoJV", thus affecting the propensity towards internationality of the company by more than twenty percentage points (21.7). In addition, the reductions in capital in favor of exports (changing from WOS to EX or from JV to EX) are associated with a positive change of 11.3 percentage points in the propensity towards an increase in internationality. This allows us to conclude that if the capital is reduced, the most significant increase in the propensity towards internalization is obtained by changing from wholly owned subsidiaries to joint ventures.

Furthermore, with the "Centricity" variable we measure the attitude towards new markets and foreign cultures held by the chief executive or TMT. Accordingly, the higher the value, the more geocentric the attitude is. We see that it has a positive and statistically significant coefficient, so it can be stated that the greatest levels of geocentrism are associated with higher levels of internationality.

The values associated with the size of the company ("Size") have a significant negative coefficient. This indicates that a smaller size would be associated with greater internationality, contradicting the logic that larger company size generally facilitates greater international expansion, by having more resources to bear the costs of internationalization. Two observations can be made. The first is that the coefficient, in spite of being negative, has a very low value that is practically negligible (–0.03), and thus the clearest interpretation would be to say that size does not matter in terms of a greater or lesser propensity towards internationality. This leads us to our second comment: the fact that the size is increasingly less important in explaining greater processes of internationality is consistent with recent processes of rapid globalization in many small companies (born global firms). New information and communication technologies, as well as the reduction of transport costs, among other factors, facilitate the internationalizing activity of small companies. Along the same lines, we frame the results for the "InternationalEx" variable, which measures the prior

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Experience carries an increasingly lower weight, as does the age of the company, to explain greater internationality of the company

experience a company has in international operations. It provides a result that is not significant, and thus we can conclude that international experience is not associated with greater internationality. Experience carries an increasingly lower weight, as does the age of the company (reflected in the "CompanyAge" variable), to explain greater internationality of the company. The age of the company presents a significant negative coefficient, although with a very low value (0.14), indicating that younger companies tend to be more likely to internationalize, according to the born global firm theory. Finally, when taking into account the industry, we see that manufacturing companies on average are associated with higher internationality values. This result is logical, given that many services are consumed locally, near the place where they are provided, and are therefore associated with more local than international markets. We also control the propensity towards change of mode (number of changes) through the "NumChanges" variable in order to separate the effect of an individual change from the fact that a company is more or less accustomed to changing its method of operation abroad. The negative value of the coefficient and its significance enables us to conclude that companies which change their foreign investment strategy many times are not those that obtain the highest degree of internationality.

6. Managerial implications and conclusions

The present study reveals some important implications for executives in Spanish companies. First of all, the modes of entry into international markets that mean a reduction in the commitment of capital invested abroad are associated with greater internationality. On the current international scene, strong capital investments in international operations are not associated with the highest levels of internationality. Therefore, the formation of international alliances, which permit smaller capital investments, seem to be the best strategy to foster a high level of internationality, by making it possible to act in multiple markets with less direct investment than with wholly owned subsidiaries.

Specifically, the change from WOS to JV represents a strategy that ensures better results in terms of obtaining greater internationality of a company. The role of international alliances is thus key to strengthening and nurturing high levels of internationality, beyond establishing wholly owned subsidiaries. Our analysis indicates, therefore, that executives (or the TMT) should consider the use of international alliances with local partners as a very plausible option for entering international markets.

Furthermore, we can emphasize the role of size and previous experience with internationalization. Our study shows that the size of the company and the time it has been operating in international markets are not relevant factors to explain greater internationality. This reinforces in part the conclusion that it is not necessary to have a lot of resources, capital or human, to obtain a high degree of internationalization. The changes that have occurred in the area of new information and communication technologies as well as lower transport and transaction costs, can help explain these results. Obtaining a high level of internationality is no longer a prerogative linked essentially to large companies, and multinational companies today do not necessarily need to be linked to a large company.

Finally, we can indicate the importance for executives (or the TMT) to have the right attitude in terms of facilitating international success. Our study highlights the importance of the right attitude on the part of executives towards international business as a decisive factor to increase the internationality of their companies. A geocentric attitude/mentality is associated with greater levels of internationality. Each executive has his or her own attitude (mentality of centric profile) with regard to foreign cultures and markets. A

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The change from WOS to JV represents a strategy that ensures better results in terms of obtaining greater internationality of a company

geocentric attitude considers that there are global similarities in terms of both cultures and markets. This attitude does not assume that either domestic (from the same country as the headquarters of the company engaging in internationalization) or local (from the new international market) practices or policies are any better or worse. This mentality is based on using those policies (in production, commercialization, finance, human resources, etc.) that manage to balance local and global practices: using the right policies and practices, regardless of the country or culture they come from. The geocentric mentality makes decisions that contemplate local responsibility and positive aspects of global coordination.

In conclusion, our work proposes a global international strategy for the international expansion of a company based on two pillars: maintaining an open mind towards foreign markets and cultures, and at the same time, limiting capital investment abroad through the use of international alliances as an ideal mechanism for achieving greater international expansion.

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https://doi.org/10.3926/hdbr.180

Contribution of Privacy by Design (of the Processes)

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Received: October, 2017.
Accepted: December, 2017.
Published: December, 2017.

Title
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Abstract
Privacy by design (PbD) will soon be a compulsory requirement for firms processing personal data. The GDPR (General Data Protection Regulation), a new Act in the EU establishes compulsory fulfillment for firms located in the European Union from May 2018. By considering that PbD philosophy leads to protect personal data, it is proposed to start the protection from the design of business activities. Privacy from the business process management perspective has barely been studied. In this paper a group of organizational mechanisms oriented to implement protection measures based on privacy by design are provided. Based on the analysis of 18 surveys done to privacy by design and data security experts, some recommendations are offered. They are based in the analysis of strengths, weakness, opportunities and threads envisioned by the different experts.

Keywords
Privacy by design, personal data, process, security, Swot analysis.

Business activities often demand the use of personal data

1. Privacy by design

The performance of business activities requires the use of data coming from persons with whom the firm interact, employees, customers, providers or public organizations in general. These persons are owners of their data and possess a group of rights on them, all around the whole cycle data run at firms, from the collecting of data to their processing and removal (Perera, Ranjan & Wang, 2015), since all may have impact on data privacy.

The EU has promoted changes in the legislation related to privacy in such a way that in 2012, a new regulation was proposed (European Commission, 2012; European Parliament, 2014), currently GDPR. It includes the principle of privacy by design (PbD).

PbD is a concept introduced in the 90s by Ann Cavoukian, ex commissioner of Information and Privacy in Ontario, Canada (Cavoukian, 2012). She proposes preserving the privacy by developing measures that integrate the fundamentals of data protection in the technological system of information processing. This initial focus (Cavoukian, 2012) has been advanced to reach three main areas of application, as technology, business practices (organizations) and physical design (infrastructures).

Since PbD has been included in the GDPR, multiple arguments have arisen supporting this focus. ICO (2017) describes: “The basis of the privacy by design approach is that if a privacy risk with a particular project is identified, this can be an opportunity to find creative technical solutions that can deliver the real benefits of the project while protecting privacy”.

Alshammari and Simpson (2017) explain: “Privacy by Design includes a lack of holistic, systematic and integrative methodologies that address the complexity and variability of privacy, and support the translation of its foundational principles into engineering activities. In some ways this is understandable: the approach was developed to take into account a range of sources and standards”.

The importance of PbD has been stressed by ICDPPC (2016) PbD: “Not only engineers but also researchers need to start considering privacy engineering principles like privacy by default and privacy by design in new research, products and services”. Although as Colesky, Hoepman and Hillen (2016) mention, PbD in itself lacks concrete tools to help software developers design and implement privacy friendly systems and also lacks clear guidelines on how to map specific legal data protection requirements into system requirements.

Some authors, as Bygrave (2017), consider that in the GDPR, PbD suffers from multiple flaws, in particular a lack of clarity over the parameters and methodologies for achieving its goals, a failure to communicate clearly and directly with those engaged in the engineering of information systems, and a failure to provide the necessary incentives to spur the ‘hardwiring’ of privacy-related interests.

This paper is related to PbD applied from the definition of business processes. It is proposed that firms, from the very first moment they forecast a business activity, they include the required assessments in relation to the personal and processing data that will have to be incorporated in that activity.

As Majdalawieh (2013) points out, privacy from the business management perspective has not been investigated at a great extent and there is a gap in the literature. No studies related to methodologies that integrate privacy in business processes have been found. This same idea is

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The EU promoted in 2012 a new legislation that impacts data privacy

revealed in Anderson and Rachamadugu (2008) and in FTC (2010). The PbD "it is also a process, which is intimately tied to the design process" (Kroener & Wright, 2014).

2. The study

The main objective of this paper is to obtain and analyze the opinion of a group of experts in information privacy and security in terms of the advantages and disadvantages that may appear in firms when integrating the protection of privacy from the business processes design.

A survey has been used to collect information and SWOT analysis has been applied to explain the obtained results by means of descriptive statistics. 18 experts have participated in the collecting of data that has taken place from January 2015 to May 2015. Table 1 shows the experts' profiles.

Table 1
Organisms and experts participating in the study

ORGANIZATION	PROFILE	EXPERT IN
Consultancy firm in data protection	Manager in Data Protection	Information system's (IS) security
iTTi, Innovation & Technology Trends Institute	Manager in IS Security	IS security
Valencia University	Lecturer in legal areas	Legal issues
Big size financial entity	Manager in IS security	IS security
Big size financial entity	Manager in IS security	IS security
Insurance firm	Manager in IS security	IS security
Public firm	Manager in IS security	IS security
Castilla La Mancha University	Full time professor in computing	IS security
Big size financial entity	Manager in IS security	IS security
Murcia University	Lecturer in legal issues	Legal issues
Rey Juan Carlos University	Lecturer in legal issues	Legal issues
Organism responsible in Data Protection	Manager	Legal issues
Insurance firm	Manager of legal issues	Legal issues
Carlos III University	Full time professor in Business Organization	IS security
Carlos III University	Lecturer in IS security	IS security
Freelance in data protection	Expert in legal issues	Legal issues
Polytechnic University of Valencia	Lecturer in IS security	IS security
Consultancy firm in data protection	Manager	Legal issues

As it is shown, all the different profiles that take part in the implementation of the system have been considered.

Statistical processing of data has taken place in a spreadsheet.

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This new legislation includes the principle of privacy by design (PbD)

Strengths and weaknesses are related to the internal analysis of the organization (leadership, strategy, people, alliances/resources and processes).

Opportunities and threads are related to the external analysis of the organization (market, industry and competence).

3. The questions and the answers

The survey designed to facilitate the obtaining of information related to weakness, threads, strengths and opportunities derived from the integration of data protection from process design and it is based in 8 questions.

The questions proposed to orient the experts in potential strengths, weakness, opportunities and threads, have been built from the dimensions oriented in the PEST techniques (Johnson & Scholes, 1997), this is to say, political dimension (by including the legal one), economic dimension, social dimension and technological dimension.

Questions related to political and legal issues are shown in table 2.

Table 2
Answers related to political and legal issues

THREADS	OPPORTUNITIES
Offer information to regulation organisms in terms of data protection.	Inclusion of this philosophy in the draft for the European Code for Data Protection 2012.
In case the degree of law fulfillment is not enough, the mix of both with the definition of processes may not be successful.	
The uncertainty on the time where the 2012 European regulation will be finally approved.	
STRENGTHS	**WEAKNESS**
Less effort in attending questions related to the Data Protection Agency (guardianship of affected).	
Improvement in the management of the protection of firm's privacy.	
It enables the detection of cases in which it is recommended developing a PIA (Privacy Impact Assessment).	

Concerning to the proposed answers that belong to the political and legal aspects (DPI, 2013) the situation referring to the new legislation dealing with future legislation concerning to privacy in the EU (European Union, 2016), the level of uncertainty at firms is increasing according to the implementation of GDPR, that contemplates the crisis, the additional charge that can imply the economic and work processes approval as the procedures and documentation and information approval.

In views of the degree of law fulfillment, according to the statistics elaborated, the number of firms that must register their files in Spain is still high (INTECO, 2012; DPI, 2013).

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PbD implies integrating data protection in the technological system of information processing

In GDPR, article number 25 explains the future obligation that firms have to elaborate and apply internal policies of data protection that offer guidelines for the principle of "privacy by design" and the "privacy by default" is described (European Union, 2016). For this reason, a potential opportunity to apply this philosophy has been included.

Answers related to the economic aspects are shown in table 3.

Table 3
Answers related to the economic issues

THREADS	OPPORTUNITIES
The risk of not being valued by stakeholders.	Reinforcement of the firm's image.
Delays in the time to market as a consequence of including privacy from design.	Higher levels of stakeholders' trust to the firm.
Use of resources (opportunity costs) in an area that it is not the core of the business in relation to competitors.	Differentiation facing competitors.
The crisis, it does not allow applying resources to these issues.	Use as marketing tool.
STRENGTHS	**WEAKNESS**
Saving in costs in the long run (excluding sanctions).	There will be more costs.
Decrease of the time and effort done in the post implementation of the defined process.	It will slow the definition of processes and therefore the putting into practice of a new business.
	An excessive effort in data security in comparison with expected results.

The proposed answers belong to the economic aspects that are related with the reluctant to the self-adoption of privacy practices by firms. The legislation could oblige them to assure that the principles of privacy are followed. As an example, GDPR establishes the application of sanctions up to the 4% of the results that the firm obtains at a worldwide level. These strong sanctions promote the adoption of the privacy practices required for the fulfillment of legislation (PRIPARE, 2014).

Recent security gaps in information systems have located privacy as a high rated asset at firms. PwC in different reports (PwC, 2013; PwC, 2014) reveals that many firms have decided to shape their business around customer's desires and most CEOs would promote changes to maintain and make their customer's portfolio increased. Customers value each time more the respect for data privacy and confidentiality (PwC, 2015a).

In the European trust barometer (Edelman, 2014) it is confirmed that an 85% of customers believe that whenever an organization exhibits data protection, it has positive effects in its compromise with the firm and with the perceived value of products and services, offering in this second effect the most outstanding impacts. This statement is reinforced by studies as Tsai, Egelman, Cranor and Acquisti (2011) or Jentzsch, Preibusch and Harasser (2012), where it is proofed that users are willing to pay more money to receive a service that respects the privacy more than an invasive alternative of it. Therefore, firms or organizations that respect privacy obtain more competitive advantages (Cavoukian, 2008; Witt 2012; PRIPARE 2014).

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A methodology to practice PbD is recommended as firms must fulfill legal requirements by 2018

The respect to privacy on the transaction of products and services will not just produce benefits in the way of increasing returns as a consequence of competitive advantage, but it will also impact in the reduction of risk to potential privacy infringements (Cavoukian, 2008; Watson et al., 2009), and consequently it will avoid non-desired effects in the corporate reputation, demands and costs of fines (Ponemon Institute, 2013). According to the analysis of the study performed in 2015 over 350 firms from 11 countries (Ponemon Institute, 2015), the cost of security breaches produced a 3.8 million of dollars as mean. A 23% of the increase in comparison to 2013 has been produced. For this research a security breach is produced whenever protected or confidential sensitive data are lost or stolen and therefore put on risk.

Answers related to social aspects are shown in Table 4.

Table 4
Answers related to social aspects

THREADS	OPPORTUNITIES
STRENGTHS	**WEAKNESS**
Higher data protection of individuals that interact with the firm (degree of accomplishment).	
Less future effort required to attend the right of affected persons (especially in terms of rectification or cancellation).	

The proposed answers belong to the social aspects related to the achievement of higher degrees of transparency for citizens, by protecting one of the most valuable assets in the organization, personal data from customers, employees, etc. (ICO, 2010; DPI, 2013).

As environmental awareness has made firm's ecological practices being increased; privacy awareness has increased the adoption of good practices in this concrete area. A survey performed by London Economics (2010) provides clear evidence that "low levels of information at firms on PET (privacy enhancing technologies) negatively impacts in their perception of benefits". It seems clear that as more information a firm has on PET and privacy practices, an increase on the perception of benefits will take place and its adoption will also increase. Self-regulation practices can therefore increase the level of awareness and the adoption of practices of privacy. Self-regulation has turned into an efficient stimulus that can support and make increase the adoption of practices of privacy, as for example, EU PIA-RFID (2011).

In a recent survey to consumers developed by PwC (PwC, 2015b), a 24% confirmed that their trust in the capability of firms to protect personal data has decreased in the last 12 months. Cybernetic security incidents are today so common that the number increased from 48% in 2013 to 42.8 million of dollars (PwC, 2015a). Last year, almost all the industries have met affected, by incurring in significant costs when managing and mitigating these incidents (PwC, 2015a). So it is not strange that CEOs keep worried for cybernetic security as a potential thread that has increased from 48% to 61% in just one year.

In the report *Achieving Total Retail* (PwC, 2014), that analyzes the perspectives and consumption habits from on line buyers, from 15.000 interviews sent to digital buyers in the whole world on the implications for the companies in the distribution and consuming industries in the next

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First step to propose one methodology consists of knowing main opinions coming from experts

years, a 43% of surveyed declared not buying on line because they felt worried for their personal data security.

In the last years espionage programs have been discovered as PRISM (Greenwald & MacAskill, 2013), in which big size companies operating in the information and communication technology industry are involved (Facebook, Yahoo Google, LinkedIn or Microsoft) together with the NSA (Ackerman, 2014). Some initiatives coming from these same companies have arisen so that worldwide companies face practices that regulate the government vigilance and the Acts that regulate their access to information. This is aligned with ancient initiatives as the OECD original principles in this specific issues (OECD, 1980), updated in 2013 (OECD, 2013) or the Madrid Declaration in 2009. This initiative promoted by the industry shows the attempt that big size firms can adopt best practices in terms of security and privacy that obstacle the government espionage programs.

Answers related to technological aspects are shown in table 5.

Table 5
Answers related to technological aspects

THREADS	OPPORTUNITIES
Possibilities of errors in the application of this philosophy produced by professionals that are not trained enough.	Possibility of contracting external services that help in the application of this philosophy.
STRENGTHS	**WEAKNESS**
Higher coordination and collaboration amongst multidisciplinary teams for the definition of processes.	The integration of process privacy analysts will not be welcomed. An excess of will to be independent from other agents.
It turns in an increase of security in general.	Excess of questions related with integrating the definition of processes (privacy, quality, security, labor risks, environment, etc.).
	Lack of methods to put into practice correctly this kind of focus.
	Lack of trained employees (in terms of privacy and in the management of processes) in the Organization to develop this kind of approaches.

In the case of responses derived from the technological aspects, it is worth to stress that when the technology presents an acceptable degree of maturity, in general, it is easier to be understood by everyone, being this time best communicated. Besides, generally speaking, maturity reduces the technological cost. To reduce the cost of privacy practices as better understanding its functioning will decrease adoption barriers (PRIPARE, 2014).

A more efficient way to transfer the research results for the successful exploitation of the market is standardization. The normalization of privacy practices facilitates its adoption, the interoperability and it can offer peaceful to consumer when new technologies are applied (PRIPARE 2014). After the disclosure of PRISM (Greenwald & MacAskill, 2013), one of the action areas to maintain the continuity in the data flows between the EU and USA consists on "promoting privacy rules at an international level" (European Commission, 2012).

Recent reports as Eurobarometers (European Commission, 2017) or reports from independent firms (Rainie, Kiesler, Kang & Madden, 2013) explain how a great majority of users in Internet

Information has been collected from 18 experts in data privacy and security issues

are worried by the use of their data when they are transmitted to providers in the payment process by using a card and Internet mobile phones.

These conclusions match with academic research from Tsai et al. (2011) and Egelman, Felt and Wagner (2013) where it is shown that users that expose their personal data prefer providers that offer them better warranties in terms of privacy, and they are even prepared to pay higher prices for the use of systems that highly protect their privacy.

In the industry different viewpoints exist in how increasing privacy in ICT systems. The adoption of privacy practices depend to a great extent on the industry where the firms obtain their benefits. While some industries as financial or health services are more opened to accept privacy practices, since they are accustomed to being evaluated in more strict exam by legal obligations (more sensitive data are processed), other industries that base their business models in the exploitation of personal data (for example, publicity on line or big data) are opposed to any practice of privacy that can endanger their business model. This trend has been confirmed by the ENISA Annual Forum in Privacy report held in 2012: "A number of technical aspects have been considered to solve the problem of privacy, targeting different parts of the privacy architecture. However, the lack of initiatives in the area of private life, where the industry will establish the requirements and initiatives to provide a complete model was once more reinforced" (ENISA 2012).

It is notorious that in this field, a "privacy industry" is being created by developing and deploying trustful frameworks and privacy solutions to enable the accomplishment of the more strict legislation.

In the PRIPARE (2013) project, sponsored by the EU with the main objective to offer a method for privacy protection that can be integrated in the development cycle of systems information, a survey was done to detect PbD practices applied to firms and the problems related with their application. Amongst the main questions, one was focused in finding out the main motivations to apply PbD by providing as potential answers some of the strengths and opportunities included in our questionnaire. Amongst main motivations, it is worth it to remark the following ones:

- Integrate the privacy that offers competitive advantages.
- Economic incentives materialized in the reduction of risks dealing with the collecting of sensitive data.
- Legal compliance.
- Standardization of requirements.
- Self-regulation of the manufacturing industry.
- Maturity and accessibility to technologies that may improve privacy.
- Compromise for the protection of customer's privacy.

4. Participants in the study

Data for the performing of the analysis have been obtained from the survey realized to a group of experts in privacy that belong to the technical environment terms of security and legal aspects derived from the information.

For the selection of experts that take part in the analysis, the following factors have been considered:

- Experience and knowledge in terms of information security and privacy / data protection, and industrial reputation.

Information coming from experts has been analyzed under a SWOT framework

- Diversity of the profiles in the group of organizations: firms, universities, associations, control authorities in the field of personal data protection, legal, consultancy and support service providers related with the protection of personal data.

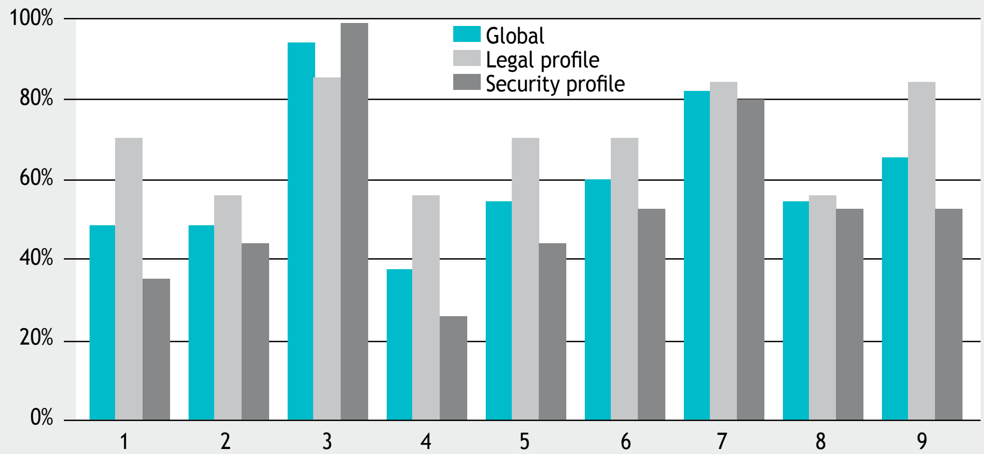
18 complete questionnaires have been received. Experts present two profiles, one of a more legal character and a second one with a more technical one, as shown in table 1. This will help getting the most complete and required information from the different perspectives.

5. Obtained results

Next the different figures showing the opinions of experts on the weakness, threads, strengths and opportunities that are considered when implementing the philosophy for the integration of the protection of data privacy from the process design perspective are provided.

Figure 1 shows that from the proposed strengths, the first chosen by experts has been the obtaining of higher degrees of personal data protection (option 3: 94%), being this option highly valued by the security profiles facing the legal ones. Second option chosen has been the improvement in the management of privacy protection in the firm (option 7: 83%), in this case, with a percentage similar between legal and security profiles. The general increase of security that implies dealing with privacy from process design has also been highly rated (option 9: 67%), in this case much better appreciated by legal than security profiles. Rest of options have been chosen by half of surveyed people, except the option 1 mainly chosen by legal profiles (saving costs in the long term less sanctions) and option

Figure 1
Results in strengths



1 Saving costs in the long run (excluding sanctions).
2 Decrease of the time and effort done in the post implementation of the defined process.
3 Higher data protection of individuals that interact with the firm (degree of accomplishment).
4 Higher coordination and collaboration amongst multidisciplinary teams for the definition of processes.
5 Less future effort to attend the right of affected persons (especially in terms of rectification or cancellation).
6 Less effort in attending questions related to the Data Protection Agency (guardianship of affected).
7 Improvement in the management of the protection of firm's privacy.
8 It enables the detection of cases in which it is recommended developing a PIA (Privacy Impact Assessment).
9 It turns in an increase of security in general.

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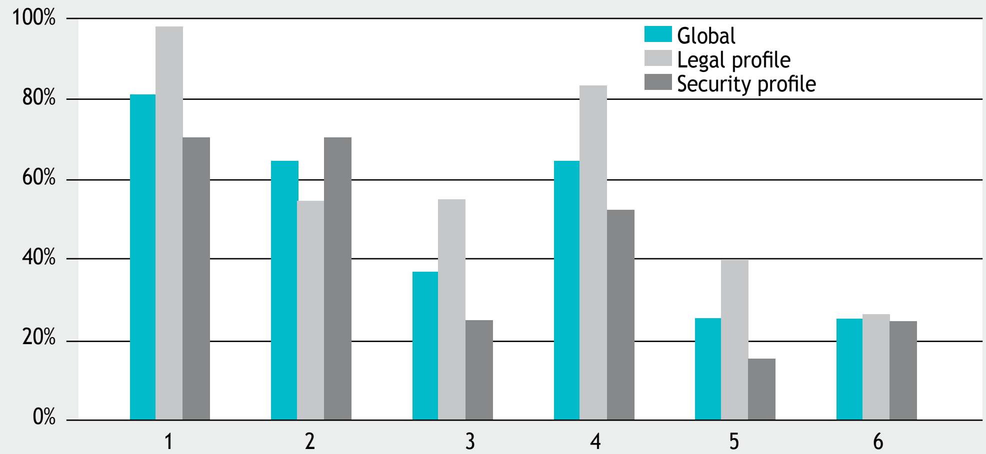
Strengths mainly have to do with providing higher degrees of data protection to data

5 (less effort, future in attending affected rights, specially rectification and cancellation). The least chosen option (option 4: 39%) is the one in counting on with the coordination and collaboration amongst multidisciplinary teams to define processes. This option has been highly rated by legal profiles contrary to security profiles.

Figure 2 shows that the opportunity mostly chosen (option 1: 83%) would proportionate the integration of privacy in the design of processes is the increase in the image of the firm, highly rated by legal profiles. Second place (option 2: 67%) has turned into the highest value in terms of trust by firm's data holders, highly valued by security profiles and in the short term (option 4: 63%) to obtain a differentiation respect to competitors, being in this case highly valued by legal profiles. The alternative that this philosophy can be included in the proposal of the 2012 European regulation in terms of data protection has not been considered (option 5: 28%), although this option has turned into more positive values in legal profiles and option 6 with the possibility of contracting external services that allow the application of this philosophy, showing similar percentages in both profiles. Option 3, the use as marketing, has been highly valued by technical profiles.

Figure 2
Results in opportunities (own elaborated)



1 Reinforcement of the firm's image.
2 Higher levels of stakeholders' trust to the firm.
3 Use as marketing tool.
4 Differentiation facing competitors.
5 Inclusion of this philosophy in the draft for the European Code for Data Protection 2012.
6 Possibility of contracting external services that help in the application of this philosophy.

Figure 3 shows that from weaknesses, the one chosen in the first place (option 6: 83%) has been the existence of lack of prepared workers (in privacy and in process management) in the Organization to deal with this kind of focus – mainly chosen by legal profiles. Second option (option 7: 72%) the lack of methods to put into practice this focus. In this option, legal and security profiles agree. The least chosen weakness (option 4: 6%) has been the excessive effort to reach potential, scarcely chosen by both profiles, legal and security ones. The assessment done by experts in terms of costs

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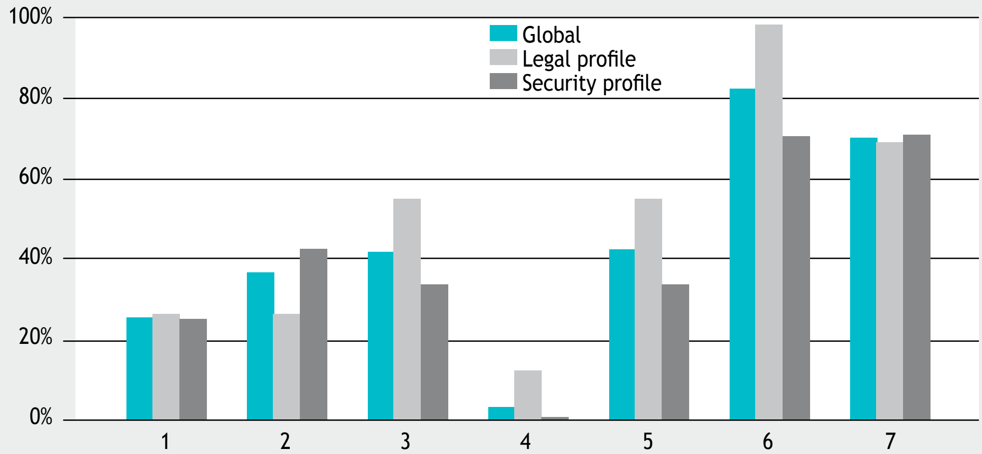
Opportunities come from the improvement in firm's image and trust from different stakeholders

can imply implementing this kind of focus (option 1), since just a 28% of them have considered the option of cost increase, agreeing legal and security profiles.

Options 3 ("The integration of process analysts in privacy would not be welcomed. An excessive desire to be independent amongst the groups") and 5 ("Two much questions to integrate in the definition of processes (privacy, quality, security, labor risks, environment…)" although they are not outstanding globally (close to a 40%), they are quite frequently chosen (almost a 60%) by legal profiles. Contrary to 2 ("It would slow down the definition of processes and the putting into practice of a new business") mostly selected by security profiles (a 43%). It is under 30% in the case of legal profiles.

Figure 3
Results in weakness (own elaborated)



1 There will be more costs.
2 It will slow the definition of processes and therefore the putting into practice of a new business.
3 The integration of process privacy analysts will not be welcomed. An excess of will to be independent from other agents.
4 An excessive effort in data security in comparison with expected results.
5 Excess of questions related with integrating the definition of processes (privacy, quality, security, labor risks, environment, etc.).
6 Lack of trained employees (in terms of privacy and in the management of processes) in the organization to develop this kind of approaches.
7 Lack of methods to put into practice correctly this kind of focus.

In Figure 4 it is shown how threads can imply delays in time to market as a consequence of including privacy by design (option 4: 56%), mostly chosen by security profiles. Second place, as the effort performed by the firm has not been valued (option 3: 50%), it has also been mostly chosen by the security profiles and last, the use of resources (cost of opportunity) in an area that does not belong to the business relating to competitors (option 1: 44%), chosen equally by legal and security profiles. Rests of options have not been chosen often. Although legal profiles have rated more "5" option than security ones. "There is a possibility to contract this option to external professional that are not prepared" and "Possibility to contract the application of this philosophy to external non prepared professionals" and "8". Crisis, today, does not allow dedicating resources to these issues.

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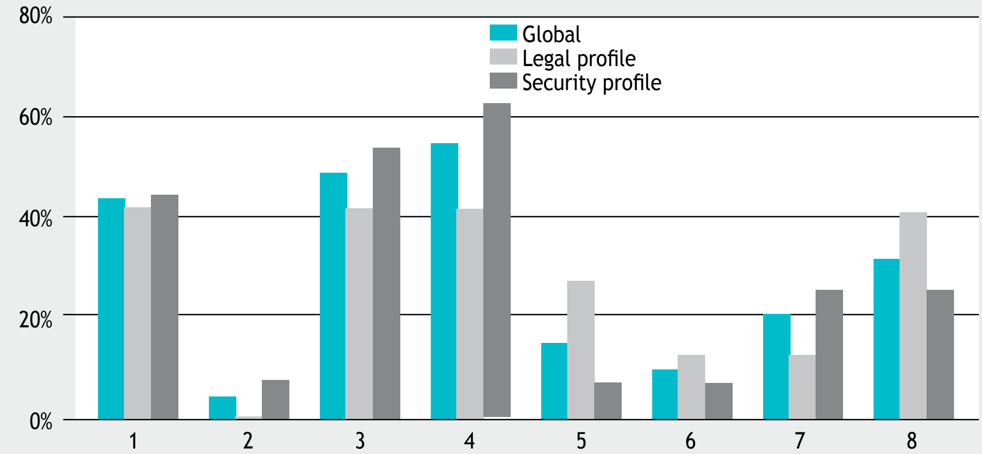
Weaknesses are related to the lack of training and prepared profiles in data privacy issues

Figure 4
Result in threads (own elaborated)



1 Use of resources (opportunity costs) in an area that it is not the core of the business in relation to competitors.
2 Offer information to regulation organisms in terms of data protection.
3 The risk of not being valued by stakeholders.
4 Delays in the time to market as a consequence of including privacy from design.
5 Possibilities of errors in the application of this philosophy produced by professionals that are not trained enough.
6 In case the degree of law fulfillment is not enough, the mix of both with the definition of processes may not be successful.
7 The uncertainty on the time where the 2012 European regulation will be finally approved.
8 The crisis, it does not allow applying resources to these issues.

6. Conclusions

The inclusion of requirements to protect people's privacy in their data processing at firms can be done at early stages, when the processes are being designed or later on, once they are implemented.

The integration of privacy data policies from the processes' design leads to the development of a group of strengths, opportunities, weakness and threads that have been judged by a group of recognized experts in data security, from the legal and technical fields.

Experts surveyed consider that strengths in this approach mainly have to do with providing higher degrees of data protection to data from people processed in the firm and opportunities come from the improvement in the image of the firm, the obtaining of higher degrees of trust of data owners towards the firm and the obtaining of a differentiation respect to competitors. Weaknesses come from the lack of training and the lack of prepared profiles (in terms of privacy and process management) in the firm to deal with this kind of focus and the lack of methods to put them into practice. Threads are related to the potential impact on the time to market, and the effort done by the firm by employing its own resources (cost of opportunity) in an area that it is not the core of the business and as a consequence of the low valuation that data owners can offer to this focus.

The most popular three options chosen for each SWOT concept are shown in table 6.

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Threads are related to potential impact on time to market and the effort done by firms to practice PbD

Table 6
Options prioritized in the SWOT analysis at a global level

STRENGTHS	WEAKNESS
It provides higher levels of data protection to all the agents the firm interact with.	There is a lack of training and lack of skilled staff (in privacy and process design) to follow this kind of frameworks.
It improves the management of privacy protection.	Lack of methods to put into practice.
A general increase of security that implies managing privacy from the processes design.	Too many issues to integrate the definition of processes (privacy, quality, security, labor risks, environment, etc.).
OPPORTUNITIES	**THREADS**
The image of the firm is improved.	Delays in the time to market.
Higher levels of trust are obtained in the data owners.	Greater business effort employing resources (opportunity cost) in a non-core competence of the firm.
It helps getting a differentiation facing competitors.	Data owners cannot evaluate the focus.

Table 7 presents by profiles (legal or security) the highly chosen options. The existence of low differences in the options selected by both profiles can be stressed.

Table 7
Options mostly selected in the SWOT analysis according to the profiles

	LEGAL PROFILE	SECURITY PROFILE
Strengths	3. Higher data protection of individuals that interact with the firm (degree of accomplishment). 7. Improvement in the management of the protection of firm's privacy. 9. It turns in an increase of security in general.	3. Higher data protection of individuals that interact with the firm (degree of accomplishment). 7. Improvement in the management of the protection of firm's privacy. 9. It turns in an increase of security in general. 6. Less effort in attending questions related to the Data Protection Agency (guardianship of affected). 8. It enables the detection of cases in which it is recommended developing a PIA (Privacy Impact Assessment).
Weakness	6. Lack of trained employees (in terms of privacy and in the management of processes) in the organization to develop this kind of approaches. 7. Lack of methods to put into practice correctly this kind of focus. 3. The integration of process privacy analysts will not be welcomed. An excess of will to be independent from other agents.	7. Lack of methods to put into practice correctly this kind of focus. 2. It will slow the definition of processes and therefore the putting into practice of a new business.
Opportunities	1. Reinforcement of the firm's image. 4. Differentiation facing competitors. 3. Use as marketing tool.	1. Reinforcement of the firm's image. 2. Higher levels of stakeholders' trust to the firm. 4. Differentiation facing competitors.
Threads	1. Use of resources (opportunity costs) in an area that it is not the core of the business in relation to competitors. 3. The risk of not being valued by stakeholders. 4. Delays in the time to market as a consequence of including privacy from design. 8. The crisis, it does not allow applying resources to these issues.	4. Delays in the time to market as a consequence of including privacy from design. 3. The risk of not being valued by stakeholders. 1. Use of resources (opportunity costs) in an area that it is not the core of the business in relation to competitors.

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As a consequence of this diagnosis, 4 different strategies are recommended so that firms can perform PbD

This group of strengths, opportunities, weakness and threads orient in the elaboration of action guides or recommendations that are going to be offered to firms and they can be considered when developing a framework of privacy by design from the process perspective to reinforce the strengths, offer solutions for weaknesses avoid threads and exploit opportunities.

According to the results, the following actions are suggested. They imply strategies and options to be put in practice so that firms can implement privacy by process design:

- Offensive strategy (strengths + opportunities):
  - Formalize the practice of privacy by process design from inside the firm, by creating procedures and organizational routines that help in its application.
  - Include as another part in the firm practices, the improvement of processes in the processing they develop from privacy.
  - Obtain whenever is possible, certifications in privacy and quality standards that proof the fulfillment with privacy.
- Defensive strategy (strengths + threads):
  - Communicate to data owners on the privacy by design focus adopted by the firm and the advantages that it implies.
  - Perform marketing actions oriented to communicate the data processing that the firms perform in terms of privacy protection.
  - Standardize tasks that help managing privacy from the process definition and that impact as less as possible in times and costs of managerial resources at firms.
- Re-orientation of strategy (weaknesses + opportunities):
  - Raise managers' awareness to consider privacy as part of all the decisions involved in the collecting and sharing of personal data.
  - Integrate the processing of privacy in all disciplines that support the process cycle in the firm, by including it in business cases, procurement processes, and project management.
  - Develop a culture of privacy awareness in employees.
  - Perform campaigns and training programs for employees in the phases of process definition to sensitize on the need to integrate the privacy in the process design.
- Survival strategy (weaknesses + threads):
  - Promote and collaborate with consultancy firms in the use of methods for integrating privacy in the definition of processes.
  - Create at organizational levels of working profiles oriented to support the culture of privacy and that can respond to the firm's employees any doubt that may arise from this specific area.
  - Incorporate privacy risks in the analysis and management of risks performed in the firm.

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Harvard Deusto Business Research. Volume VI. Issue 3. Pages 176-191. ISSN: 2254-6235