

The pharmaceutical industry in light of the demand for corporate social responsibility

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ABSTRACT In recent years, there has been increasing interest in corporate social responsibility (CSR) in the pharmaceutical industry. This is due to the impact of CSR on the society's quality of life, along with the criticism regarding the economic interests of the industry.

From a Spanish context, this article pursues a twofold objective. Firstly, we undertook to analyze the information published by pharmaceutical companies in their sustainability reports. Secondly, we examined the determinants of dissemination of CSR-related information by these companies. The results indicate that pharmaceutical companies in Spain are highly committed to sustainable economic development – especially in the case of the most profitable and experienced pharmaceutical companies – and they prepare their sustainability reports in pursuance of the Global Reporting Initiative.

KEYWORDS sustainable development, determinants, dissemination of information, Global Reporting Initiative, sustainability report.

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La industria farmacéutica ante la demanda de responsabilidad social corporativa

RESUMEN En los últimos años ha aumentado el interés por la responsabilidad social corporativa (RSC) en la industria farmacéutica. Esto se debe a su impacto en la calidad de vida de la sociedad, junto con las críticas recibidas en relación con los intereses económicos de la industria.

Desde un contexto español, este artículo tiene un doble objetivo. En primer lugar, analizar la información que publican las empresas farmacéuticas en sus informes de sostenibilidad. En segundo lugar, examinar factores determinantes de la divulgación de información sobre RSC que realizan estas empresas. Los resultados obtenidos indican que, en España, las empresas farmacéuticas se muestran muy comprometidas con el desarrollo económico sostenible, especialmente en el caso de las farmacéuticas más rentables, con más experiencia, y que elaboran sus informes de sostenibilidad conforme a la Global Reporting Initiative.

PALABRAS CLAVE desarrollo sostenible, determinantes, divulgación de información, Global Reporting Initiative, memoria de sostenibilidad.

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A indústria farmacêutica diante a demanda de responsabilidade social corporativa

RESUMO Este artigo tem como finalidade descrever, na abordagem dos sistemas de custos, os processos de distribuição de custos utilizados nas grandes empresas fornecedoras de medicamentos no estado de Mérida, concentradas em sua maioria na cidade de Alberto Adriani, e suas consequências na tomada de decisões nas operações. Se desenvolveu uma pesquisa descritiva, em campo, baseada num plano não experimental de um estudo de caso. Se conclui que o cálculo da rentabilidade por lojas, baseado do sistema de custos totais utilizado por estas empresas, é arbitrário devido à distribuição de gastos indiretos, com base no nível das vendas por unidades físicas partindo da unidade central à loja, o qual distorce as utilidades. Recomenda-se, para fins externos, distribuir os custos de acordo com bases geradoras observáveis ou geradoras de custos que meçam o consumo de recursos ou dos esforços da unidade central sobre uma loja, baseado no sistema de custeio absorvente. Para avaliar internamente a gestão das lojas, recomenda-se não colocar gastos indiretos, segundo exposto no sistema de custeio direto.

PALAVRAS CHAVE desenvolvimento sustentável, determinantes, divulgação de informação, Global Reporting Initiative, memória de sustentabilidade.

Introduction

In recent years an increasing interest in the practices of corporate social responsibility (CSR) performed in the holding organizations (Gore, 2006; Nevado, Gallardo & Sanchez, 2013) is taking place, especially in pharmaceutical companies (Volodina, Sax & Anderson, 2009). This is because, even though this industry aims to improve the quality and life expectancy of the society (Piña & Suarez, 2014), it has received strong criticism for prioritizing its own private interest above people's survival (Porter & Kramer, 2006). Consequently, authors like Kermani (2004) and Roner (2005) have highlighted the deterioration suffered by the image of the pharmaceutical industry in relation to CSR.

Therefore, pharmaceutical companies must be especially sensitive to the demands of stakeholders, and find ways of effective approach in order to enhance their legitimacy and generate greater confidence (Leisinger, 2005; Lozano & Huisingh, 2011; Chen, Srinidhi, Tsang & Yu, 2012). In this sense, Pomeroy & Dolnicar (2009) point out the need to implement in the sector a CSR strategy, which involves the dissemination of information on the social, economic and environmental impact of their actions.

In light of the above, companies have raised new ways of routing the business and showing the most relevant business information (Frias - Aceituno, Rodríguez - Ariza & Garcia - Sanchez, 2013, 2014). This new model of business information should make it clear that the importance of preparing new annual reports, in addition to including the corporate strategy and operational and financial results, contains information on various economic, environmental, social and governance factors (Eccles & Krzus, 2010). CSR reporting models, include a relevant one: the guidance for reporting on the Global Reporting Initiative (GRI). Its content reveals how to design information on the organization management approach, as well as the economic, social and environmental performance (Marcuello, Bellostas, Marcuello & Moneva, 2007).

On the other hand, the dissemination of CSR reporting to different stakeholders is also essential. In this respect, new information technologies (ITC), and especially the Internet, can play a key role (Castelo & Lima, 2006; Meijer, 2009). Unlike traditional media, the use of Internet enables organizations to provide updated information

and interact with users, so that the information needs of the different stakeholders are best served (Wanderley, Lucian, Farache & Milton, 2008). Based on this premise, the growth of the Internet has allowed web pages to become a new tool for communication and accountability (Gallego, García & Rodríguez, 2009; Adelopo, Ramiro, Lucely & Obalola, 2012; Djajadikerta & Trireksani, 2012).

Regarding the CSR literature in the pharmaceutical sector there are, on the one hand, research papers that analyze particular cases of CSR practices in one or more pharmaceutical companies (Smith, 2008; Gutierrez Novoa & Silva, 2010; Piña & Suarez, 2014). On the other hand, authors like Dukes (2005), Engelhardt & Garrett (2008) and Droppert & Bennett (2015) have focused on law and ethics in the pharmaceutical industry. In addition, other studies have analyzed the CSR strategies applied in the sector (Khanna, 2006; Capaldi, 2008; Brooks, Perez & Perez, 2009; Del Castillo, Penagos, Navarro, Polo & Berrio, 2011). However, there are few studies which delve in the dissemination of information on CSR and its determinants in the sector. In this regard, the literature has focused primarily on other sectors such as financial companies (Castelo & Lima, 2006; Haro, Benitez & Caba, 2011), or listed companies (Tagesson, Blank, Broberg & Collin, 2009; De la Cuesta & Value, 2013) and SMEs (*PYMES*) (Maldonado, Marin & Perea, 2011; Moneva & Hernandez, 2009).

On the basis of the historical background above, and within a Spanish context, the work has a double objective: first, to analyze the information published by pharmaceutical companies in their sustainability reports; and second, to establish the determinants that affect the dissemination of information on CSR in the sector. The results of this study may provide a significant contribution both from the academic and professional point of view. From an academic perspective, let us deepen into the dissemination of CSR practices carried out by pharmaceutical companies, as well as advances in the understanding of the main determinants of this dissemination. From a business perspective, this study can serve as a reflection on the benefits of carrying out CSR actions and strategies in the sector, as well as the dissemination thereof.

In order to achieve the objectives above, this paper is divided into six parts. After this introduction, the second section introduces the concept of CSR and there is an allusion to its development in

the pharmaceutical sector. Subsequently, the third section approaches the existing literature on the subject is reviewed. The following paragraph describes the research methodology conducted and the field of study. The fifth paragraph presents the obtained results, and the last presents the conclusions.

CSR and the pharmaceutical sector

Literature defines CSR as the set of procedures and actions adopted by organizations to promote good practices in the management of economic, social and environmental aspects (AECA, 2004; Gelbmann, 2010). In the context of the pharmaceutical industry, Del Castillo *et al.* (2011) define CSR as a set of practices, principles and values that imply a commitment of the company to behave ethically and contribute to the development and quality of life of its stakeholders. In any case, most definitions imply business ethics, stakeholders' relevance beyond the owners and the voluntariness of these actions (Schmidheiny, Chase & DeSimone, 1997; Schwartz & Carroll, 2003; De la Torre, 2009).

CSR has become a key activity in many corporations because it is considered "the right thing to do" (Gan, 2006). CSR is closely related to the three pillars - social, environmental, and economic - of sustainable development. This approach, known as the Triple Bottom Line, expresses the idea that an organization should be, in addition to an economic and financial institution, a social and environmental entity (Elkington, 1997). In this regard, it is clear that CSR has the organization as its focus, considering the responsibilities of an organization towards the society and the environment, while sustainable development means meeting the needs of the society within the ecological limits of the planet, and without compromising the ability of future generations to meet their needs (Guide to the social responsibility of the international organization for standardization, 2010). Therefore, we can conclude that a well - implemented CSR policy is key to sustainable development (Herrmann, 2004); in other words, it contributes to sustainable development by keeping the links that relate the company with its surroundings (Raufflet, 2010).

The emergence of international organizations like the United Nations, the Organization for Economic Co-operation and Development or the International Labor Organization, rapidly accelerated the development of CSR (Haro Alarcon & Caba, 2012). This development has led to the emergence of CSR evaluation standards that companies may adopt voluntarily. Many of these standards and guidelines have been formalized through different proposals for the CSR management standardization and the sustainability reports content (Muñoz & Tirado, 2014).

The guidelines for reporting on CSR include the ones prepared by the GRI (Galvez, Caba & Lopez, 2012; Muñoz & Tirado, 2014; Bolla - Araya & Segui - Mas, 2014). This entity, the Global Reporting Initiative (GRI), was created in 1997 by the Coalition for Environmentally Responsible Economies (CERE) and the United Nations Environment Program (UNEP), with the aim of promoting quality, rigor and profitability of sustainability reports. Over the years, the GRI has established a set of guidelines for the preparation of sustainability reports, in which definitions and measurement systems on issues related to the Triple Bottom Line are included. Since its inception, the GRI has released several updates to its guide, most recently the G4 of 2013.

By focusing the study on CSR practices in the pharmaceutical sector, we can observe that this industry has suffered quite a lot of criticisms in recent years, in regards to research cost, the debt assumed by public agencies and health care co - payments, amongst other economic and political aspects. This is the reason more responsible actions are being required from the pharmaceutical industry (Scrum, 2006, Gonzalez Goraieb, 2005), such as dissemination of information concerning its social commitment (Saez, Haro & Caba, 2014).

Despite the relevance of CSR in the sector, most studies have focused on analyzing specific CSR activities, such as the creation of economic opportunities, industry perspective or product prices and licensing (Leisinger, 2005; Mahmud & Parkhurst, 2007; Vian, McCoy, Richards, Connelly & Feeley, 2007). Therefore, few authors have analyzed the human rights obligations which the pharmaceutical companies have (Gruskin & Raad, 2010; The PLoS Medicine Editors, 2010).

In the Spanish context, we can highlight the second report of the Foundation for Health Research (Fuinsa, 2011) (*Fundación para la Investigación en Salud* - for its acronym in Spanish), which shows

that although 100 % of the sector's companies carry out responsible actions, they fail in communicating thereof both externally and internally.

In this sense, given the importance of CSR in the pharmaceutical sector, and in order to emphasize that good practices are important but useless without a proper communication strategy to stakeholders, an analysis of CSR reports that pharmaceutical companies operating in Spain posted on their websites shall be conducted.

Literature Review

The progress of CSR and the evolution of the sustainable development concept have resulted in a significant increase in the literature on this subject in recent years. In accordance with Milne & Gray (2007), most of the studies conducted are focused on developed countries, since the dissemination of social and environmental information has appeared as a phenomenon of such countries (Holme, 2010; Misani, 2010; Ralston, 2010; Chen, 2011).

In addition to the studies analyzing the implementation of CSR practices, there are others who have gone a step further to examine the influence of variables of economic, governmental, social and cultural nature in the information published by companies in CSR reports. In this sense, Chivite, Enciso Garcia & Túa (2014) provide an comprehensive list of the work done so far on CSR determinants, which is taken as the basis for the review of the literature on determinants of dissemination of CSR information, as summarized in Table 1 below.

In accordance with the literature review conducted, a series of variables that may affect the information published by pharmaceutical companies in their sustainability reports was selected:

Size

The size of a company is considered one of the most important determinants in the dissemination of information on CSR, which has been analyzed in numerous studies (Patten, 1991; Giner, 1997; Coulmont, Berthelot & Thibault, 2013). Deegan & Gordon (1996) state that the existence of a positive relation between the size of the company and the dissemination of information is related, on the one hand, with the greatest exposure to public opinion which are subject large

TABLE 1. Literature review

AUTHOR	VARIABLES
Bansal (2005)	Size
	Profitability
	Quotation
Castelo & Lima (2008)	Size
	Indebtedness
	Profitability
Chih <i>et al.</i> (2010)	Sector
	Size
	Profitability
	Legal environment
Gao <i>et al.</i> (2005)	Presence of independent entities
	Size
	Sector
Pozniak <i>et al.</i> (2011)	CSR Information disclosed by industry
	Size
	Profitability
	Sector
	Age
Reverte (2009)	Quotation
	Size
	Profitability
	Sector
Roberts (1992)	Indebtedness
	Quotation
	Size
	Profitability
	Indebtedness
Roberts (1992)	Age
	Legal Regulation
	Shareholders power

Source: Authors.

companies; and secondly, with the greatest access to material, financial and human resources available to those companies. Based on these precedents, the first hypothesis is as follows:

H1: *The size of pharmaceutical companies positively influences the dissemination of information on CSR.*

Women in the administrative board

The presence of women in the business world has experienced strong growth, rising to represent a decisive role in the administrative boards (Alonso, 2008). In accordance with Krishnan & Park (2005), the presence of women on the

administrative board increases the profitability of the companies. In this line, authors like Francoeur, Labelle & Sinclair - Desgagné (2008) and De Cabo, Gimeno & Nieto (2012) argue that the inclusion of women on administrative boards favors the troubleshooting by improving the operation thereof. On the other hand, Robinson & Dechant (1997) indicate that women add new values and points of view to the administrative boards, which increases the value of the organization and the business performance.

Since the administrative board of a company is commissioned to design, develop and implement the CSR strategies and actions (Urquijo & Crespo, 2004; Alonso, 2008), gender diversity on administrative boards is a key variable in terms of CSR. In this context, the second hypothesis is as follows:

H2: *The proportion of women on the administrative board of pharmaceutical companies positively influences dissemination of information on CSR.*

Financial profitability

Research on voluntary dissemination of information often points to a positive relationship between disclosure of information and profitability of companies. Thus, Archel & Lizarraga (2001) analyze how companies often reveal more information when their financial indicators are positive. Hackston & Milne (1996), meanwhile, argue that once the economic objectives are achieved, companies tend to increase their investment in social activities. Therefore, companies with positive economic outcomes are more likely to disseminate information of all kinds, including information on CSR (Larrán & Giner, 2002; Marston & Polei, 2004). In line with the existing literature, the third hypothesis is as follows:

H3: *Financial profitability of pharmaceutical companies positively influences the dissemination of information on CSR.*

GRI

The implementation of the GRI recommendations framework for preparing sustainability reporting is nowadays a minimum guarantee in terms of structure, content, quality and usefulness of these reports (Haro *et al.*, 2012). However, not all companies prepare their reports in accordance

with the GRI criteria, as these are voluntary. In this regard, in addition to differentiate between their application or not of the GRI principles, it is also convenient to analyze the level of GRI utilized (GRI3, GRI3.1 or GRI4). Given the importance of the GRI, the fourth hypothesis is as follows:

H4: *The level of GRI application of pharmaceutical companies positively influences dissemination of information on CSR.*

Indebtedness

Authors like Clarkson, Kao & Richardson (1994) and Frankel, McNichols & Wilson (1995) argue the existence of a positive relation between the level of indebtedness and voluntary reporting. However, although several authors like Hossain, Perera & Rahman (1995), Xiao Yang & Chow (2004) and Alvarez (2007) have tried to show this relation, few have achieved significant results between the two variables. Based on these precedents, the fifth hypothesis is as follows:

H5: *The indebtedness of pharmaceutical companies positively influences the dissemination of information on CSR.*

Experience

Works such as Larrán (2002) and Espinosa (2004) argue that experience, credibility and reputation increase both the dissemination of information and the quality of the latter. Hence, the skills and knowledge that companies acquired over the years positively influences factors such as image, market share, know - how and, ultimately, make the experience that a company has. Therefore, the number of years it takes an operating business is considered as an appropriate measure of its experience (Scherr & Hulburt, 2001; Haro, Caba & Cazorla, 2014). All authors agree on the positive effect of this variable, so the sixth hypothesis proposed is:

H6: *The experience of pharmaceutical companies positively influences the dissemination of information on CSR.*

Methodology

In accordance with the proposed objectives, the research methodology is structured in two

phases. First, by means of a descriptive analysis, the information on CSR that pharmaceutical companies publish online in their sustainability reports is examined. Secondly the possible factors that can influence the sustainability information disclosed by this sector are reviewed through an explanatory analysis.

Descriptive analysis

To study the information in sustainability reports a series of items obtained from the *Guidelines for the Preparation of Sustainability Reports* is used (GRI G3.1, 2011). This guide shows the principles, guidelines and content for the preparation of CSR reports, and suggests a number of key indicators and other additional.

In accordance with the GRI, which specifies three - dimensional analysis for CSR, three sub - indices of responsibility have been developed to determine the pharmaceutical companies' percentage in compliance with the items established: economic (IR_e), environmental (IR_A) and social (IRs).

The economic dimension includes items related to the performance and economic impact of the company as well as its market presence and indirect economic impacts. For its calculation the 9 items were considered, of which 7 are primary and 2 are additional (see Appendix 1). The estimation of the IR_e sub - index performed as follows (by carrying out the remaining estimates analogously):

$$IR_e = \frac{\sum_{i=1}^9 ir_i}{9} \times 100$$

The environmental dimension is made up of 30 items, 17 primary and 13 additional items, which cover aspects related to materials that have been used, as well as energy, water, biodiversity, emissions, discharges, waste and compliance with environmental regulations (see Appendix 2).

The social dimension brings together items that identify the main aspects of performance in relation to labor issues, human rights, society and product responsibility. This dimension is the broadest of the three and consists of 45 items, of which 30 are primary and 15 additional (see Appendix 3).

In total, 84 items will be used in order to analyze the behavior of pharmaceutical companies regarding the dissemination of information on CSR. When it comes to rate the items, a dichotomous system is used, so that each item (ir_i) is rates with a "1" if the information is available and "0" otherwise.

Explanatory analysis

The second part of the work includes the explanatory analysis, which seeks to identify those factors that influence significantly in the dissemination of information on CSR in pharmaceutical companies. To do so, the explanatory factors selected in the previous section were taken as independent variables (see Table 2). As for the dependent variables, the sub - indices of the previously calculated economic, environmental and social dimensions were selected. In addition, a total responsibility index (IR - Índice de Responsabilidad - for its acronym in Spanish) was added as the

TABLE 2. Explanatory factors and expected relations

FACTOR	MEASURE	EXPECTED RELATION
Size	EBITDA Napierian Logarithm	Positive
Women in the administrative board	Percentage of women in the administrative board	Positive
Financial profitability	Profitability ratio (Operating profits on equity)	Positive
GRI3.1 Application	GRI Level: 0. GRI does not continue 1. GRI3 continues 2. GRI3.1 continues 3. GRI4 continues	Positive
Indebtedness	Indebtedness ratio (current plus non - current liabilities on total assets)	Positive
Experience	Number of years in operation	Positive

Source: Authors.

dependent variable, which is determined by the ratio between the sum of the scores of all items (ir_j), and the total number of observed items:

$$IR = \frac{\sum_{i=1}^{84} ir_i}{84} \times 100$$

Once the independent and dependent variables are defined, a correlation analysis is conducted. Then, in order to establish an econometric model explaining the degree of dissemination of information from the behavior of selected determinants, we proceed to apply a Tobit regression model. The structure of the proposed model is:

$$IR_j = \beta_0 + \beta_1 \cdot Tam_j + \beta_2 \cdot MujC_j + \beta_3 \cdot Roe_j + \beta_4 \cdot Gri_j + \beta_5 \cdot End_j + \beta_6 \cdot Ex_j + \mu$$

Where:

β_0 = constant term

β_i = position parameters

μ = random disturbance

j = credit institution analyzed

Field of study

To select the sample of pharmaceutical companies operating in Spain (national and international) subject of this analysis, we started from the SABI database (Iberian Balance sheet Analysis System) (*Sistema de Análisis de Balances Ibéricos* – for its acronym in Spanish). Then two filters were made. First, it was filtered by the CNAE codes (*Clasificación Nacional de Actividades Económicas* – for its acronym in Spanish) of the

pharmaceutical companies: 21, 21.1, 21.10, 21.02 and 21.20, and secondly, a minimum operating income of € 100,000 was established. With these criteria, a preliminary sample of 315 companies is obtained.

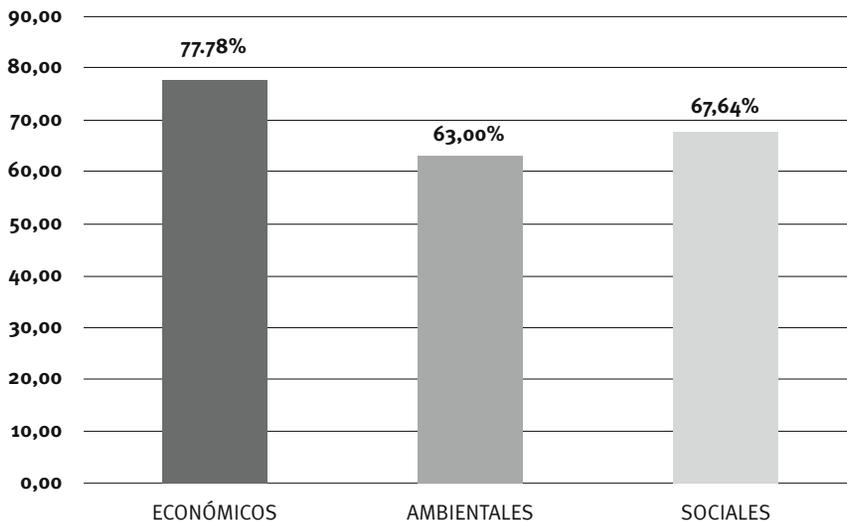
Subsequently, the sample was defined in accordance with the *online* availability of sustainability reports and CSR reports for the year 2014, resulting in a final sample of 50 companies. From these companies, we have found that 20 show CSR reports that do not follow the standards of the GRI, 7 follow the GRI3, 14 the GRI3.1 and only 9 follow the GRI4.

Results

Descriptive analysis

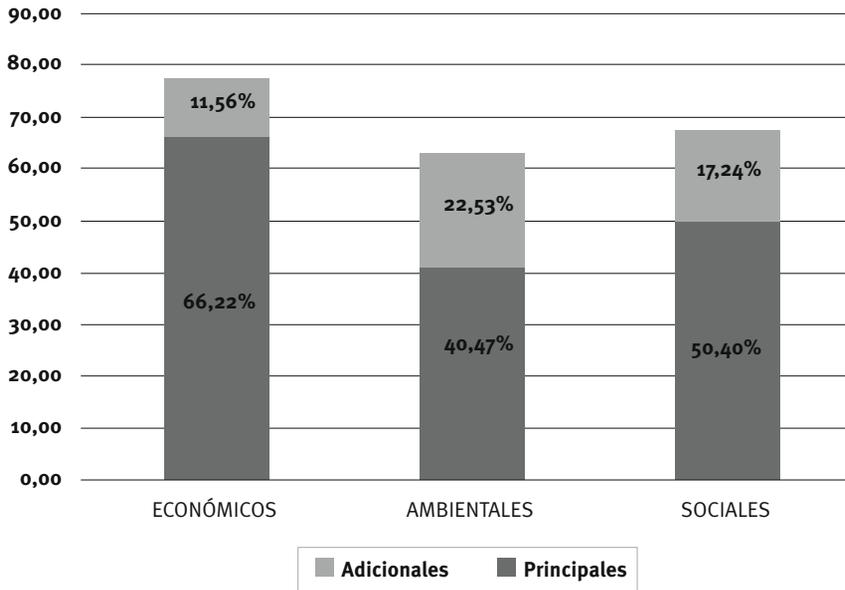
Beginning by the descriptive analysis, Figure 1 shows how the dimension with the greater volume of information is economic, with 77.78 %. This is because all companies disseminate the direct economic value generated and distributed, and most of them, disseminate information on the financial implications, risks and climate change opportunities. Secondly, there is the social dimension, with 67.64 %. In the last place appears the environmental dimension, with 63 %, even if it has the lowest percentage of the three dimensions, over time we estimate that this situation

FIGURE 1. Dissemination of the CSR by dimensions



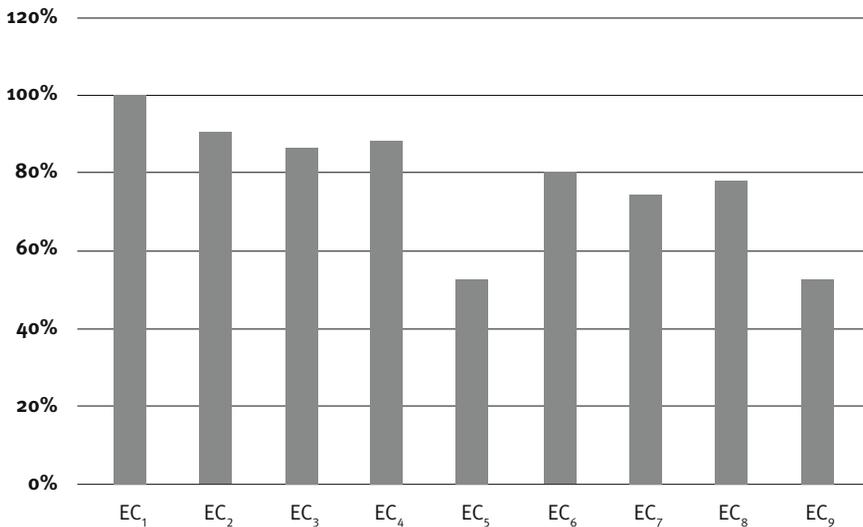
Source: Authors.

FIGURE 2. Primary and additional items



Source: .Authors.

FIGURE 3. Dissemination of the economic dimension components



Source: Authors.

shall change, as increasingly more importance is given to environmental problems and the material used in the manufacture of pharmaceuticals.

If we attend to the differences between the primary and additional items that present each of the dimensions (see Figure 2), the results indicate that additional items represent as much information on the environmental dimension. This type of items gives pharmaceutical companies the ability

to extend aspects of their primary dimensions, which increases the transparency image facing the stakeholders.

Subsequently, we discussed in detail the items that comprise each dimension, in order to check the kind of information pharmaceutical companies pay greatest attention to in their CSR reports. Regarding the economic dimension (see Figure 3), the item EC₁ is the component about which

pharmaceutical companies report most frequently in their sustainability reports (100 %). This is a basic indicator of how the organization creates wealth for its stakeholders.

EC₂, EC₃, EC₄ and EC₆ items present compliance percentages between 80 % and 90 %. These indicators are those regarding the financial consequences, liability coverages, financial support of a significant nature received by the government and practices with suppliers. Finally, items relating to the breakdown of wage by gender, promote procedures for local hiring, the impact of infrastructure investments and significant economic impacts description (items EC₅, EC₇, EC₈ and EC₉) are the least - present indicators in CSR reports.

As for the environmental dimension, item EN₁ is the one with a higher percentage, 96 % (see Figure 4). This indicator refers to the contribution of the pharmaceutical organization to the conservation of resources and efforts to reduce the intensity of materials use and increase the efficiency of the economy. Here are some items EN₂, EN₃, EN₄, EN₈, EN₂₀, EN₂₁ and EN₂₂, with compliance rate of between 70 % and 80 %. These indicators provide information on the materials used that are recycled, the direct and indirect energy consumption, the total water catchment by sources, significant air emissions, wastewater discharges total and the total weight of the waste.

The remaining items of this dimension only appear, on average, in the middle of the pharmaceutical companies analyzed (items EN₅, EN₆, EN₇,

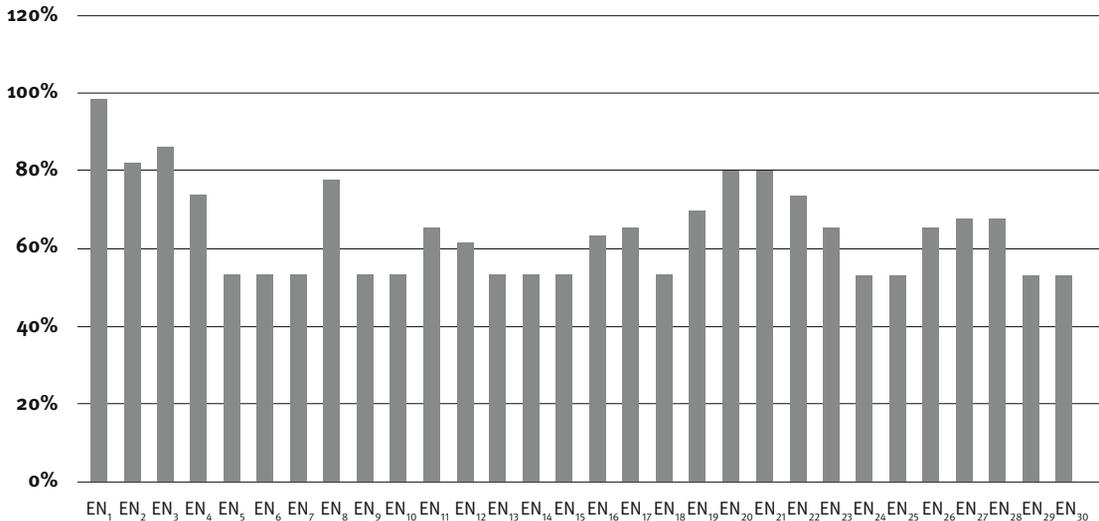
EN₉, EN₁₀, EN₁₃, EN₁₄, EN₁₅, EN₁₈, EN₂₄, EN₂₅, EN₂₉ and EN₃₀). Are indicators for, among others, saving of efficient energy, efficient products promoting initiatives, power indirect consumption reduction, affected water sources, rate and volume of water recycled and habitats that have been protected and restored.

The social dimension includes 45 items, which are grouped into four categories (see Figure 5): labor relations (LA), human rights (HR), social aspects (SO) and products (PR). The LA₁ item is the one with a higher percentage of dissemination (98 %). This indicator refers to the breakdown of the workforce by contract type, region and gender, and is considered an important indicator because the size of the workforce helps to understand the magnitude of the impact derived from labor issues.

Items LA₂, LA₇, LA₁₅, HR₅, SO₁ and SO₃ appear in 80 - 90 % of sustainability reports. These items refer to, among others, the total number of employees, new hires rates, average employee turnover, absenteeism rates, diseases caused by profession, lost days, the number of work - related fatalities, levels of return to work after maternity or parental leave and percentage of employees who have been trained in anti - corruption policies and procedures.

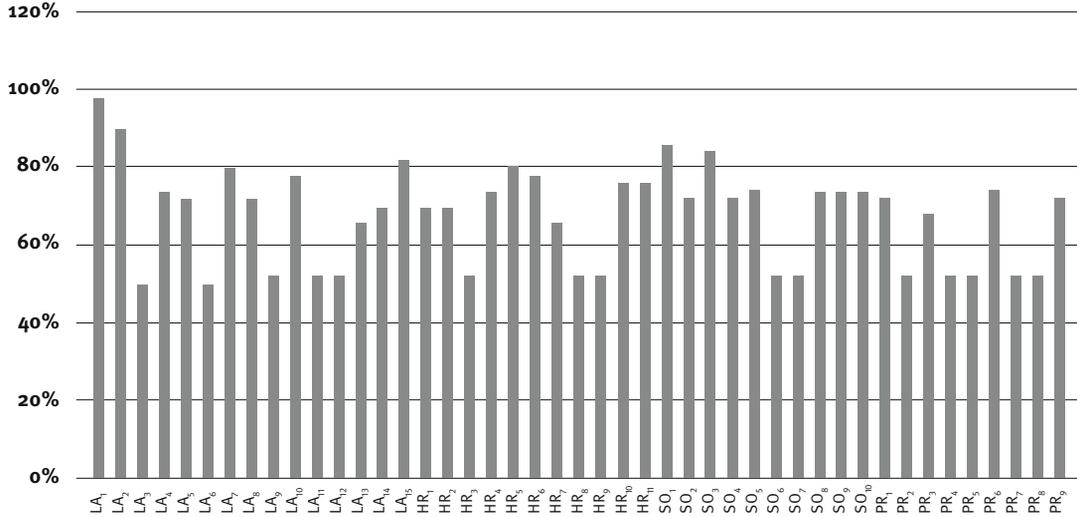
Finally, LA₃, LA₆, LA₉, LA₁₁, LA₁₂, HR₃, HR₈, HR₉, SO₆, SO₇, PR₂, PR₄, PR₅, PR₇ and PR₈ items are only offered by 50 - 52 % of the pharmaceutical companies. These indicators are those concerning

FIGURE 4. Dissemination of the environmental dimension components



Source: Authors.

FIGURE 5. Dissemination of the social dimension components



Source: Authors.

social benefits for employees, workers represented by committees of health and safety, health and safety issues covered in agreements with trade unions, management programs for skills and lifelong training that support the employability and help them in their careers, employees who receive regular assessments in the performance of their tasks and security personnel who have been trained in accordance with the policies and procedures of the organization, among others.

Explanatory analysis

Regarding the explanatory analysis, the correlation matrix indicates that only the woman and experience independent variables are significantly correlated (see Table 3). However, this correlation is low grade and, in accordance with Nachtsheim, Neter, Kutner & Wasserman (2004),

this does not cause any multicollinearity problem that could compromise the model.

Once the correlation analysis is completed, the results of the four proposed regression models are shown in Table 4. As shown, all models are significant, so the choice of a Tobit regression model has been adequate. Regarding the explanatory variables of the CSR dissemination in pharmaceutical companies, 12 of the 24 relations were significant. The variables that affect each model are detailed below.

The size variable is significant in the full model (IR) and in the social dimension (IRs). However, contrary to the assertions of authors like Patten (1991), Deegan & Gordon (1996) and Coulmont *et al.* (2013), the results indicate that size is negatively related to the level of dissemination of information on CSR presented by the pharmaceutical companies analyzed. One explanation for this

TABLE 3. Pearson correlation matrix

	SIZE	WOMAN	PROFITABILITY	GRI	INDEBTEDNESS	EXPERIENCE
Size	1					
Woman	-0,1061	1				
Profitability	0,1356	-0,0267	1			
GRI	0,0828	-0,0925	-0,0009	1		
Indebtedness	-0,1237	-0,0446	0,0597	-0,1342	1	
Experience	0,2359	-0,2966**	0,0937	0,1296	0,1677	1

* The correlation is significant at 0.1 level. ** The correlation is significant at the 0.05 level. *** Correlation is significant at the 0.01 level.

Source: Authors.

TABLE 4. Results of Tobit regressions

LR CHI2(6)	IR		IR _E		IR _A		IR _S	
	Coef.	t	Coef.	t	Coef.	t	Coef.	t
	38,49***		19,60***		37,97***		33,75***	
Size	-0,0389	-2,07**	-0,0441	-1,60	-0,0221	-0,94	-0,0471	-2,34**
Woman	-0,2693	-2,50**	-0,4323	-2,75***	-0,1978	-1,48	-0,2994	-2,59**
Profitability	0,1069	1,56	0,0354	0,34	0,1897	2,01**	0,1019	1,39
GRI	0,1017	5,42***	0,0646	2,33**	0,1319	5,61***	0,0972	4,80***
Indebtedness	0,1215	1,32	0,2111	1,57	0,0678	0,58	0,1468	1,48
Experience	0,0011	2,10**	0,0010	1,21	0,0016	2,36**	0,0009	1,61

*Significant at 0,1 level. **Significant at 0,05 level. ***Significant at 0,01 level.

Source: Authors.

result is that smaller companies may be using, to a greater extent than the largest and most consolidated companies in sector, CSR reports as a means to increase the confidence of stakeholders, as well as an opportunity to differentiate themselves from the rest of competitors.

There is a negative and significant relation between the variable that measures the percentage of women on administrative boards and the level of dissemination of information on CSR submitted by these companies, in models IR, IR_E and IR_A. Therefore, as in previous case, although it is confirmed that this variable influences the dissemination of information on CSR, the sign of the relations does not coincide with the hypothesis initially raised. In accordance with the aforementioned benefits of the incorporation of women to administrative boards, pharmaceutical companies with more women on administrative boards were expected to submit more complete sustainability reports.

In terms of financial profitability, the latter is only significantly associated with the sub - index of the environmental dimension responsibility (IR_A). In this case, the relation is positive, so that the expected relation is confirmed. Thus, as noted above, the best performing companies are more willing to use voluntary reporting mechanisms, including dissemination of information on sustainability (Archel & Lizarraga, 2001 is; Larrán & Giner, 2002; Marston & Polei, 2004).

The variable that indicates the level of the GRI application is the only variable which was significant in all four models (IR, IR_E, IR_A and IR_S), generating a positive effect on the information in the CSR reports. This result is consistent with the Haro *et al.* (2012), since pharmaceutical companies following the GRI disseminate more information on CSR than the rest. Furthermore, the

results also indicate that the higher the GRI application, the greater the provision of information on sustainability.

In relation to the experience, it is significant in the total model (IR) and in the environmental dimension (IR_A). This variable has a positive relation in both models. Therefore, in line with authors like Larrán (2002) and Espinosa (2004), the results indicate that pharmaceutical companies that take longer in operation, submit more comprehensive CSR reports.

In accordance with the results obtained in the explanatory analysis, Table 5 summarizes the starting hypotheses that have been confirmed or rejected.

TABLE 5. Verification of the hypothesis

HYPOTHESIS	ACCEPTANCE
H ₁ : The size of pharmaceutical companies positively influences the dissemination of information on CSR.	No
H ₂ : The proportion of women on the administrative board of pharmaceutical companies positively influences the dissemination of information on CSR.	No
H ₃ : The financial profitability of pharmaceutical companies positively influences the dissemination of information on CSR.	Yes
H ₄ : The level of GRI application of pharmaceutical companies positively influences the dissemination of information on CSR.	Yes
H ₅ : The indebtedness of pharmaceutical companies positively influences the dissemination of information on CSR.	No
H ₆ : The experience of pharmaceutical companies positively influences the dissemination of information on CSR.	Yes

Source: Authors.

Conclusions

The growing interest in ethical business behavior, especially in social and environmental issues, has led to a change in mentality both stakeholders and companies. In this line, CSR increasingly awakens interest in socially responsible activities carried out by organizations, as well as the achievement of sustainable development. In the case of Spain (although the issue of CSR and dissemination of information have come later than in other countries) its reception has been very good, especially by large companies.

If we focus on the pharmaceutical sector, this is considered one of the most important and respected both nationally and internationally, for the solution and prevention of health problems. In addition, despite the current economic crisis, pharmaceutical companies are part of one of the privileged sectors that have continued to grow over the past decade, even in the strongest periods of crisis. However, the pharmaceutical sector has also been affected by the negative impact generated by their activities on the environment and society. This includes the emergence of generic drugs (white brands), the cost of investment in research and technological development, the impact of these researches on the environment, the debt owed by the government, the health co-payment and the regulations modifications, among other economic and political aspects.

Given this environment - which not only affects the development of the sector but to society in general - the pharmaceutical industry should not remain outside the scope of the CSR. In this regard, it is appropriate to make changes to the information provided to stakeholders, since transparency should be total in health-related issues. Thus, in view of the great impact associated with their activity, and the high number of people who may be affected, it is necessary to conveniently report on issues regarding the quality of the products and services offered.

In accordance with the study, this process of change has begun, as more pharmaceutical companies disseminate online information on CSR. The GRI and its framework of recommendations for preparing sustainability reports have greatly contributed to this process. In addition, in accordance with the development of information and communications technology, pharmaceutical companies are increasingly using Internet to publish their CSR reports, so that they are accessible to all.

With respect to pharmaceutical companies operating in Spain, we can say that there is a high degree of dissemination of information on CSR, being the economic information the most reported (77.78 %) and the least the environmental (63 %). This desire for reporting is also reflected in the effort being made by analyzed pharmaceutical companies by addressing not only the main items proposed by the GRI, but also additional items.

In any case, large differences between the results obtained in the three dimensions of CSR are not observed. In addition, it is estimated that the environmental dimension shall become increasingly important in the coming years, as stakeholders are increasingly concerned by such issues as toxic waste into rivers or polluting packaging, among others. Therefore, although it is expected that in the near future the three dimensions of CSR remain important, companies tend to focus more on reporting on environmental or social issues in the traditional economic information.

Regarding the hypotheses raised in regards to the determinants of the information published on sustainability in the pharmaceutical industry, hypothesis concerning the positive effect on profitability, the application of the GRI and experience have been accepted. Moreover (contrary to expectations), having a small business size and a lower percentage of women on the administrative board are features that have also had a positive impact on the provision of information on CSR.

Finally, it should be noted that although the research aims to increase the understanding of the strategies and actions carried out by the pharmaceutical companies in the CSR field, as well as the factors influencing the adoption of socially responsible behavior in such companies, there is still much to learn about CSR practices in this industry. Therefore, for future research lines, it would be interesting to include other countries in the sample, analyze time series and conduct a more detailed analysis in order to determine which companies truly meet the information they disseminate in their reports or sustainability reports. It would also be interesting to extend the explanatory analysis including new variables.

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APPENDICES

APPENDIX 1. Economic dimension items

CODE	INDICATORS
EC ₁	Direct economic value generated and distributed, including revenues, operating costs, employee compensation, donations and other community investments, retained earnings and payments to capital providers and governments.
EC ₂	Financial implications and other risks and opportunities for the organization's activities due to climate change.
EC ₃	Liability coverage of the organization due to social benefit programs.
EC ₄	Significant financial assistance received from governments.
EC ₅ (Additional)	Range of relations between standard starting salary by gender compared to local minimum wage in places where significant operations occur.
EC ₆	Policy, practices and expense proportion corresponding to local suppliers in places where significant operations are developed.
EC ₇	Procedures for local hiring and proportion of senior management hired from the local community in places where significant operations are developed.
EC ₈	Development and impact of infrastructure investments and services provided primarily for public benefit through commercial commitments, pro bono or in kind.
EC ₉ (Additional)	Understanding and description of significant indirect economic impacts, including the extent of these impacts.

APPENDIX 2. Environmental dimension items

CODE	INDICATORS
EN ₁	Used materials by weight or volume.
EN ₂	Percentage of used materials that are recycled materials.
EN ₃	Direct power consumption by primary source.
EN ₄	Indirect energy consumption by primary source.
EN ₅ (Additional)	Energy savings due to conservation and efficiency improvements.
EN ₆ (Additional)	Initiatives to provide products and services efficient in energy consumption or based on renewable energies, and reductions in energy requirements as a result of these initiatives.
EN ₇ (Additional)	Initiatives to reduce indirect energy consumption and reductions achieved through these initiatives.
EN ₈	Total water catchment by source.
EN ₉ (Additional)	Water sources significantly affected by water catchment.
EN ₁₀ (Additional)	Percentage and total volume of recycled and reused water.
EN ₁₁	Description of adjacent land or within protected natural areas or unprotected areas of high biodiversity. Please, indicate the location and size of land owned, leased or managed, with high biodiversity value outside protected areas
EN ₁₂	Description of the most significant impacts on biodiversity in protected natural areas or unprotected areas of high biodiversity arising from activities, products and services in protected areas and areas of high biodiversity value outside protected areas.
EN ₁₃ (Additional)	Protected or restored habitats.
EN ₁₄ (Additional)	Strategies and actions implemented and planned for managing impacts on biodiversity.
EN ₁₅ (Additional)	Number of species, broken down in accordance with their risk of extinction, included in the IUCN Red List and in national lists and whose habitats are in areas affected by operations, in accordance with the degree of threat of the species.
EN ₁₆	Total direct and indirect greenhouse gases emissions, by weight.
EN ₁₇	Other indirect greenhouse gases emissions, by weight.
EN ₁₈ (Additional)	Initiatives to reduce greenhouse gases emissions and reductions achieved.
EN ₁₉	Emissions of substances that destroy the ozone layer, by weight.
EN ₂₀	NO, SO and other significant emissions to the air by type and weight.
EN ₂₁	Total waste water dumping, in accordance with their nature and destination.
EN ₂₂	Total weight of managed waste by type and disposal method.
EN ₂₃	Total number and volume of significant accidental spills.
EN ₂₄ (Additional)	Weight of transported, imported, exported, or treated waste deemed hazardous under the Basel Convention classification, Appendixes I, II, III, and VIII, and percentage of waste internationally transported.
EN ₂₅ (Additional)	Identification, size, protected status and biodiversity value of water bodies and related habitats significantly affected by discharges of water and runoff waters from the reporting organization..
EN ₂₆	Initiatives to mitigate environmental impacts of products and services, and extent of impact mitigation.
EN ₂₇	Percentage of sold products and their packaging materials that are reclaimed at the end of their useful life, by product categories.
EN ₂₈	Cost of significant fines and number of non - monetary sanctions for the non - compliance with environmental regulations.
EN ₂₉ (Additional)	Significant environmental impacts of products transportation and other goods and materials used for the activities of the organization, as well as personnel transportation.
EN ₃₀ (Additional)	Breakdown by type of total environmental expenses and investments.

APPENDIX 3. Social dimension items

CODE	INDICATORS
LA ₁	Breakdown of the workforce by employment type, by contract, by region and by gender.
LA ₂	Total number of employees and new hires rate and average employee turnover, broken down by age, gender and region group.
LA ₃ (Additional)	Social benefits for full - time employees that are not provided to temporary or part - time employees, broken down by significant activity locations.
LA ₄	Percentage of employees covered by a collective agreement
LA ₅	Minimum period (s) of notice concerning operational changes, including whether these notices are specified in collective agreements.
LA ₆ (Additional)	Percentage of total workforce represented in joint management - employees' health and safety committees, established to help controlling and advising on health and safety at work.
LA ₇	Rates of absenteeism, occupational diseases, lost days and number of work – related fatalities by region and gender.
LA ₈	Education, training, counseling, prevention and risk control programs apply to workers, their families or community members regarding serious diseases.
LA ₉ (Additional)	Health and security issues covered in formal agreements with trade unions.
LA ₁₀	Average hours of training per year per employee by gender, and by employee category.
LA ₁₁ (Additional)	Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing the end of their careers.
LA ₁₂ (Additional)	Percentage of employees receiving regular performance and career development reviews, by gender.
LA ₁₃	Composition of corporate governance bodies and workforce, broken down by employee category, gender, age group, minority and other diversity indicators.
LA ₁₄	Relation between men base salary with respect to women, disaggregated by professional category.
LA ₁₅	Return to work and retention levels after maternity or paternity leave, broken down by gender.
HR ₁	Percentage and total number of significant investment contracts and agreements that include clauses incorporating concerns on human rights or having been subject of analysis in the human rights field.
HR ₂	Percentage of suppliers, contractors and other significant business partners that have been subject of analysis in the human rights field and actions taken as a result.
HR ₃ (Additional)	Total hours of employee training on policies and procedures concerning aspects of human rights relevant to operations, including the percentage of employees trained.
HR ₄	Total number of discrimination events and corrective actions taken.
HR ₅	Significant operations and suppliers identified in which the right to freedom of association and collective bargaining may be violated or at significant risk, and actions taken to support these rights.
HR ₆	Significant operations and suppliers identified as having significant risk of child labor events, and measures adopted to contribute to the effective abolition of child labor.
HR ₇	Significant operations and suppliers identified as having significant risk for incidents of forced or compulsory labor, and measures taken to contribute to the elimination of all forms of forced or compulsory labor.
HR ₈ (Additional)	Percentage of security personnel who have been trained in the policies or procedures of the organization in aspects of human rights relevant to the activities.
HR ₉ (Additional)	Total number of events related with violations of the rights of indigenous people and actions taken.
HR ₁₀	Percentage and total number of operations that have been subject to review or impact assessments on human rights.
HR ₁₁	Number of complaints related to human rights filed, addressed and resolved through formal grievance mechanisms.
SO ₁	Percentage of operations where development, impact assessments and local community participation programs have been implemented.
SO ₉	Operations with negative significant impacts, potential or actual, on local communities.

CODE	INDICATORS
SO ₁₀	Prevention and mitigation measures implemented in operations with significant negative impacts, potential or actual, on local communities.
SO ₂	Percentage and total number of business units analyzed for risks related to corruption.
SO ₃	Percentage of employees trained in anti - corruption policies and procedures of the organization.
SO ₄	Actions taken in response to corruption events.
SO ₅	Position in public policies and participation in their development and <i>lobbying</i> activities.
SO ₆ (Additional)	Total value of financial and in kind contributions to political parties or related institutions by country.
SO ₇ (Additional)	Total number of actions related to monopolistic practices and against free competition and their results.
SO ₈	Monetary value of significant sanctions and fines and total number of non - monetary sanctions for the non - compliance with laws and regulations.
PR ₁	Products and services life cycle phases in which they are assessed for, if necessary, be improved, the impacts thereof on the health and safety of customers, and percentage of significant products and services categories subject to such evaluation procedures.
PR ₂ (Additional)	Total number of events as a result of the non - compliance with legal regulations or voluntary codes concerning to the impacts of products and services on health and safety during their life cycle, distributed by type of result of such events.
PR ₃	Types of information on products and services that are required by existing procedures and regulations, and percentage of products and services subject to such information requirements.
PR ₄ (Additional)	Total number of regulation and voluntary codes breaches concerning information and labeling of products and services, distributed depending on the type of result of these incidents.
PR ₅ (Additional)	Practices related to customer satisfaction, including results of customer satisfaction studies.
PR ₆	Programs of compliance with laws or adherence to standards and voluntary codes mentioned in marketing communications, including advertising, other promotional activities and sponsorships.
PR ₇ (Additional)	Total number of incidents as a result of from the non - compliance with regulations concerning marketing communications, including advertising, promotion and sponsorship, distributed depending on the type of result of such incidents.
PR ₈ (Additional)	Total number of duly substantiated complaints in relation to the respect for privacy and the customer data leakage.
PR ₉	Cost of those significant fines as a result of the non - compliance with laws and regulations concerning the provision and use of products and services of the organization.