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Environmental Management in Businesses: Does It Make Money? An Accounting Perspective

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Additional information is available at the end of the chapter

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1. Introduction

The growing interest in businesses for conducting environmental management makes us to think about the reasons that justify it. A number of studies (Barth & McNichols, 1994; Power, 1997, Shields & Boer, 1997, Walden & Schwatz, 1997 & Vachon & Klassen, 2008) found that environmental management provided a new challenge for businesses due to the introduction of an environmental perspective in managing them in addition to the economical one. Therefore, the question that arises is whether environmental management makes money in businesses or it is just a new social value with non economic effects. Among the potential benefits attributed to environmental management may be distinguished: energy savings, lower cost of compliance with environmental regulations, waste reductions and more efficient processes. These improvements may be associated to improvements in economic performance through competitiveness (Porter, 1990, 1991; Porter & van der Linde, 1995a, 1995b, McGee, 1998 & Wagner, 2008). Such competitiveness would be translated into positive outcomes for organisations, derived from higher turnover through the "green" customers, lower costs caused by compliance with environmental regulations and better resources management and, finally, total quality management covering the life cycle of products from design to disposal.

Other studies are concerned about the environmental accountability of companies to society (Cormier & Magnan, 2007 & Clarkson et al., 2008). In this sense, the development of environmental accounting can be crucial in sake of comparability of environmental information. Developing an integrated environmental management system into the company's business strategy is needed to articulate an information system that permeated throughout the business area. Accounting, as an analytical tool for decision, is a prominent part of the articulation of the information system; that can translate into financial terms the

different business activities (Gray & Bebbington, 2001; Larrinaga-Gonzalez & Bebbington, 2001, Burnett & Hansen, 2007, Vargas et al., 2010 & Gray 2010). Moreover, the accounting system could be employed to seek out, identify and exploit financial savings in resources usage, waste and emissions that would necessarily lead to reductions in the companies' impacts (Ditz et al., 1995, Epstein, 1996, Bennett & James, 1997a, b, Curkovic et al, 2006, Curkovic & Sroufe, 2007, Curkovic et al., 2008 & Abelda, 2011).

From different empirical studies is concluded that there is an ambiguous relationship between environmental performance and financial performance (Shane & Spicer, 1983; Aupperle et al., 1985 & Alexander & Buchholz, 1987). Even though there is a positive correlation among them (Wokutch & Spencer, 1987 & McGuire et al., 1988) it is not known if a stronger financial performance only implies that there are more resources to spend on environmental performance as argued by available funds theory (McGuire et al., 1988, 1990) or if an improvement in environmental performance really improves financial results as advocated by good management theory (Freeman, 1984).

The defenders of stakeholder theory argue that the existence of environmental performance is a requirement for the legitimacy of companies in their environment and that environmental and financial performance tends to be positively associated over time (Freeman, 1984 & Suchman, 1995). Critics of this theory maintain that if managers attend to interests other than those of their investors, there is a breach of their confidence which will harm the wellbeing of shareholders (Friedman, 1962).

The stakeholder theory establishes that companies act in an environmental responsible way for legitimacy with their stakeholders, which means that companies are more concerned about designing of policies and objectives than about achieving results. Therefore, the perceptions of organisations regarding their environmental management are much more optimistic than the achieved results would allow. In accordance to this theory, Moore & Robson (2002) obtained from their study that companies found easier and less costly to design environmental policies and objectives than to implement environmental management that would enable them to achieve and check their results.

Furthermore, other researchers considered the importance of environmental disclosures as a tool of legitimacy of the performances of the companies with their environment according to the tenets of Mouck (1995), Taylor et al. (2001) and Cho & Pattern (2007).

Preston & O'Bannon (1997) distinguished two different approaches to the relationship between environmental performance and financial performance. The first approach is based on the direction of the relationship (positive or negative) while the second one is based on causality (which one leads to the other) and the synergies between them. From these approaches they established 6 hypotheses in their typology:

1. Social impact hypothesis: High (low) levels of environmental performance lead to high (low) levels of financial performance.
2. Trade-off hypothesis: High (low) levels of environmental performance lead to low (high) levels of financial performance.

3. Available funds hypothesis: High (low) levels of financial performance lead to high (low) levels of environmental performance.
4. Management opportunism hypothesis: High (low) levels of financial performance lead to low (high) levels of environmental performance.
5. Positive synergy hypothesis: There is a positive synergy between financial performance and environmental performance.
6. Negative synergy hypothesis: There is a negative synergy between financial performance and environmental performance.

On the other hand, Ullmann (1985) arguments that it is necessary to consider the strategic position of the company towards social demands, because the models should include elements to express the nature of the relationship between environmental performance and financial performance. In this regard, Berman et al. (1999) distinguish three models on the stakeholder theory:

1. The direct effects model: The relationship between the stakeholder and the company strategy has a direct and separate effect on financial performance.
2. The moderation model: The company strategy has a direct effect on financial performance, but moderated by the relationships established between the stakeholders.
3. The stakeholder intrinsic commitment model: The company takes on an intrinsic commitment to the various stakeholders, such that the interests of the stakeholders make up the basis of the strategic decision-making process.

The main objective of our analysis is to understand the development and implementation of environmental management through a particular business sector: the tiles sector in Spain, which is considered as one with high environmental impacts in the United Nations' list and besides, it represents a very dynamic and innovative sector that may suppose flexibility in order to introduce environmental management.

Through three studies carried out over time we were analyzing the above-mentioned sector. This type of analysis allowed us to use the findings of each study as a starting point for the realization of the following study; getting feedback from them. Each of the studies has been used a different methodology: the first has resorted to an exploratory-descriptive survey, the second to a case study research and the third to factor analysis and correlations.

From a survey about the tiles sector in Spain in 1998 an initial diagnosis was established (Masanet-Llodra, 1999). This diagnosis revealed that only a very poor minority of firms were concerned about establishing environmental management systems, although the majority of them proclaimed their environmental awareness. As further studies were required, in 2001 a case study research was undertaken (Masanet-Llodra, 2006). The findings showed the adoption of the most obvious and sensible environmental improvements, which have low costs, together with investments in the most innovative technologies on the market for obtaining competitive advantages that go beyond business image. At present, we carry out an analysis of the relationship between corporate social responsibility (CSR) and financial performance (Masanet-Llodra et al., forthcoming) by using factor analysis for obtaining CSR

indicators- environmental management included- in order to look for correlations among those and the financial ones. The obtained results indicate that there is a positive correlation between the CSR self-evaluation and the CSR actions directed to their stakeholders. Not all the CSR indicators have effect on the financial profitability of companies, but direct stakeholders and compliance checks have a positive correlation with return on equity and the debt ratio, which provides evidences of the available funds theory.

All of the three studies corroborate the legitimacy theory, since the perception of firms was much more optimistic than the achieved results would allow.

In the following sections we are going to present the three studies and their findings as well as the conclusions and implications for future research.

2. Initial diagnosis

The initial diagnosis was carried out by a survey for the whole population -265 companies- of the analysed sector. It had been used an exploratory-descriptive methodology due to there were no previous studies –at that moment- in the tiles sector in Spain related to environmental systems and accounting. This survey was undertaken through a semi-structured questionnaire with 31 items. Previously to design our questionnaire we made a pilot survey with 8 companies randomly selected in order to avoid differences between academic and managerial language.

The survey was made along 1998, and although different efforts -e-mails, telephone-calls, revisiting three or four times- were done to assure the response, the percentage of it was 10.18%. This percentage cannot be representative for inference studies but it did not differ from other similar surveys carried out in Spain. Nevertheless, after analysing our sample it resulted representative of the population regarding to all the analysed categories -size, sub-activity, ways of production, types of management, financial composition, volume of exports, hierarchical organization of the countries to which it is exported, potentially sensitive investments, distribution of the resources for training and respondent position.

From the survey it was obtained an initial diagnosis of the analysed sector from different items.

2.1. Relationship between firms and environment

There were around 20% of firms that considered environment had no relationship with their business. Such percentage even overcame the number of firms that observed environment as an opportunity. This fact together with the high level of no responses reasserted that most of firms saw environment as a threat (figure 1).

However, the majority of firms were aware that they interacted with their environment, what it was very important because the identification of a problem is previous to its solution.

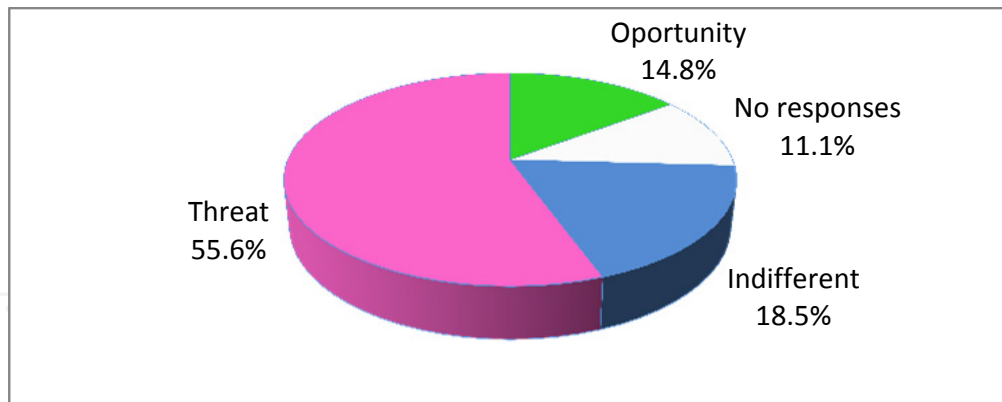


Figure 1. Environmental relationship

2.2. Establishment of environmental policies

The responses showed that the percentage of firms that established environmental policies was superior to the firms that did not (figure 2).

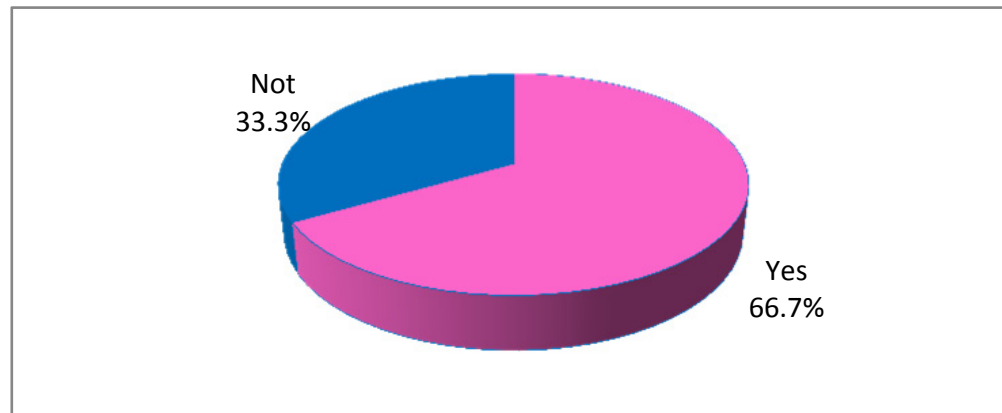


Figure 2. Environmental policies

The majority of firms had established their environmental police in an informal way, but 40% of them had done it in a formal one, so the level of the formality was not so far from the sample mean (figure 3). However, such formality was not reflected in the accounting statements (figure 4).

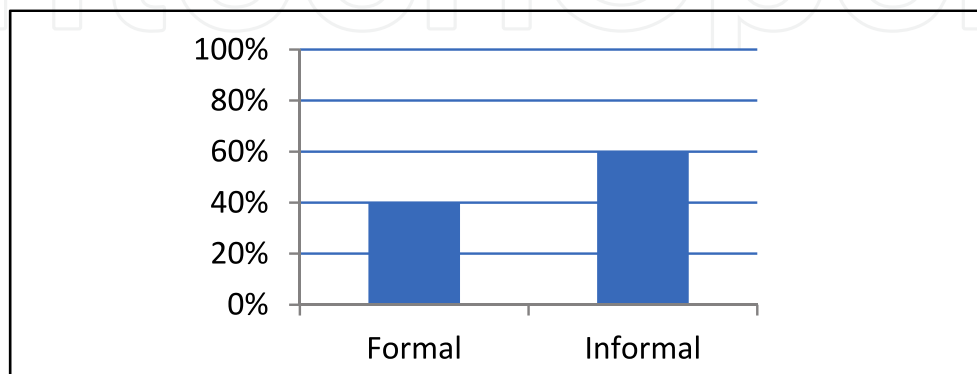


Figure 3. Level of formality

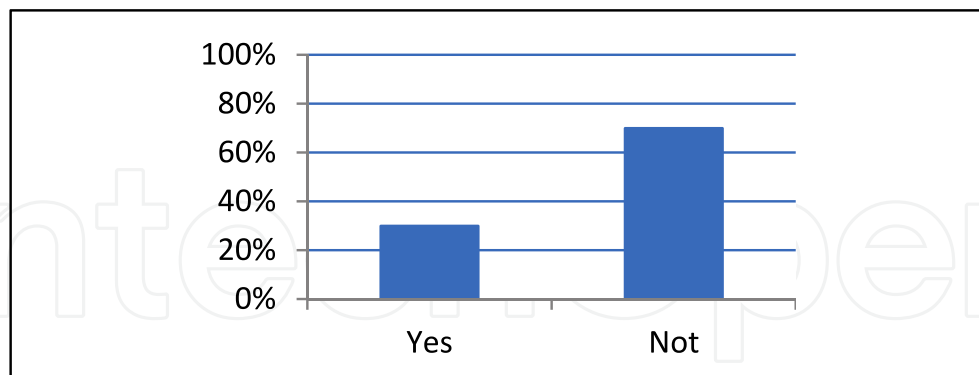


Figure 4. Accounting reflection

The previous hypothesis was that the level of formality of environmental policies should be correlated to the accounting statements reflection, but after calculating Pearson coefficient of correlation such evidence was not found ($r = 0.1889$, $p\text{-value} = 0.519$).

2.3. Knowledge of environmental management standards and adoption level

Although the huge majority knew the environmental management standards, only a small percentage had adopted them in their companies (table 1).

Responses	Knowledge ISO 14001	Adoption ISO 14001
Yes	74.1 %	11.1%
Not	25.9%	85.2%

Table 1. Knowledge and adoption of ISO 14001 (ISO, 1996)

There were a very small percentage of companies that were about obtaining ISO 14001, so the total percentage of adoption did not correspond to 100%.

2.4. Knowledge of European Community regulation, importance and adoption level

There were a very high percentage of companies that did not know the European Community regulation 1836/93 (European Communities, 1993) about voluntary membership in an environmental management and audit system. Nevertheless, the huge majority of companies knew about it (figure 5).

Although 59.3% of companies knew the EC regulation, only 37% considered convenient to adopt it (figure 6) and no one had been adopt it at that moment (figure 7).

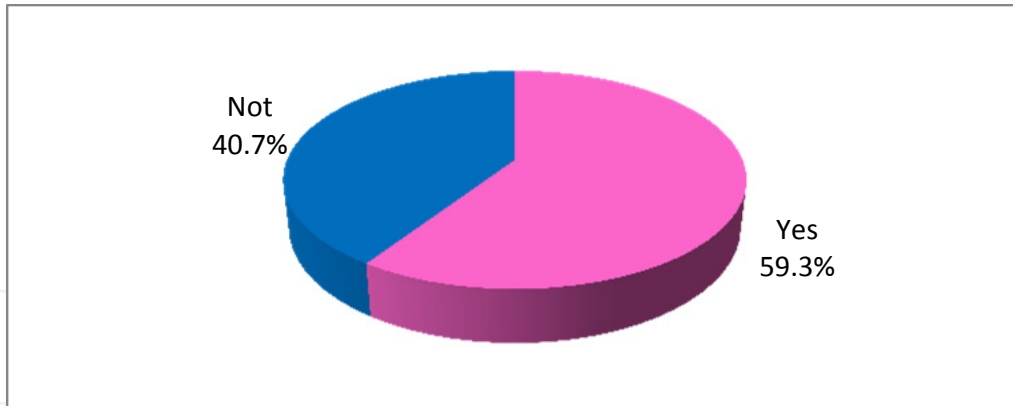


Figure 5. Knowledge of EC regulation 1836/93

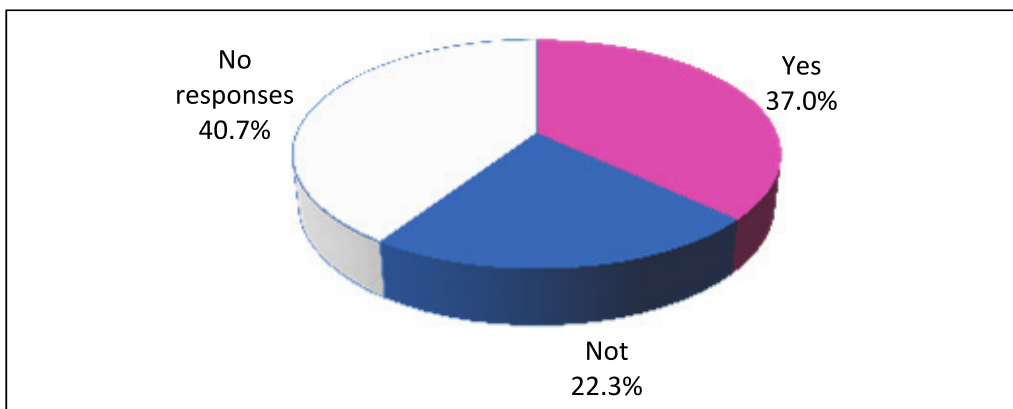


Figure 6. Convenience of adoption

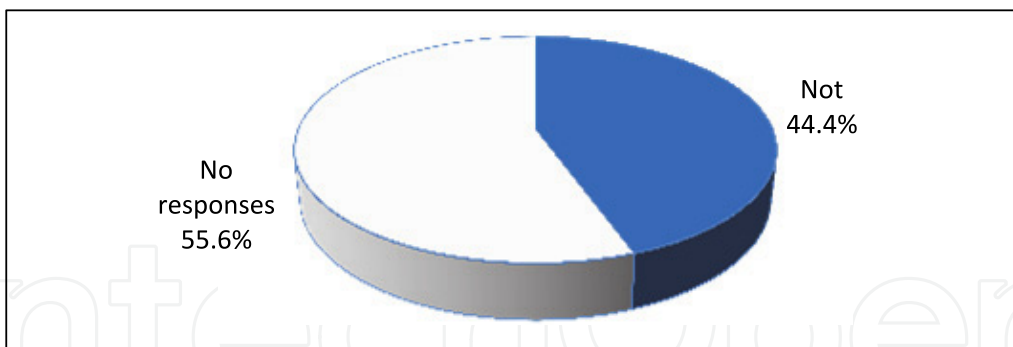


Figure 7. Level of adoption

2.5. Determination of environmental objectives in management strategy

About 50% of companies established environmental objectives in their management strategies (figure 8).

Related to the elaboration of environmental balance-sheets of energy, raw materials... to compile the obtained results, there were around 30% of companies that did not compile environmental results. While among those companies that compiled environmental results there were a higher percentage of those that did it in a formal way (figure 9).

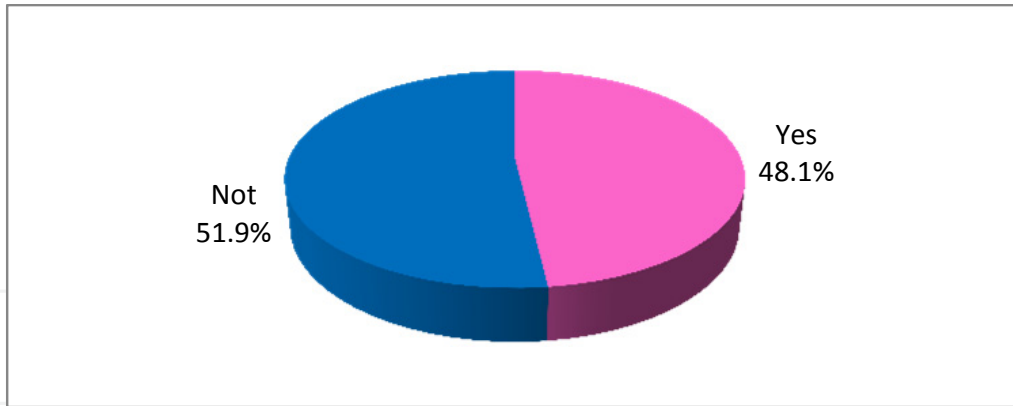


Figure 8. Environmental objectives

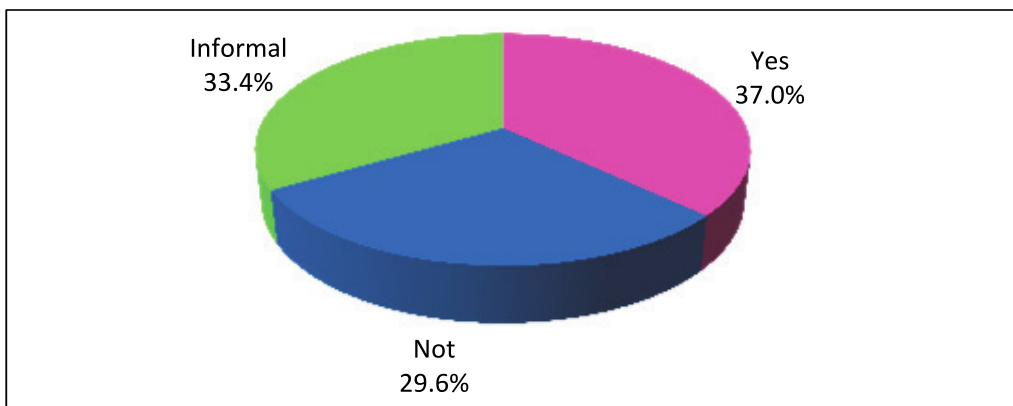


Figure 9. Environmental Balance-Sheets

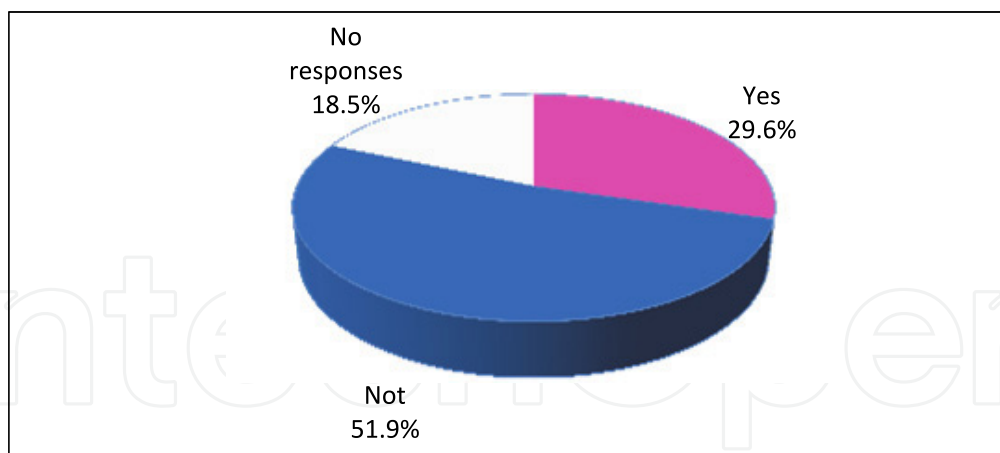


Figure 10. Comparison of objectives and results

However, more than a half of companies did not realise any comparison between environmental objectives and results (figure 10). Jointly with the level of no responses could be explained, in best cases, by the incipient development of environmental awareness so they were in the phase of introducing strategies and far away from controlling results. And in worst cases, such incongruities could be a symptom of an environmental marketing strategy.

2.6. Identification of conditions of environmental improvement

In table 2 are compiled the conditions of environmental improvements mentioned by the firms.

Conditions of environmental improvement	Very agree (5)	Agree (4)	Indifferent (3)	Disagree (2)	Very disagree (1)	Mode
Legislation pressure	11	13	1	1	1	4
Source control	4	12	8	1	1	4
"Green" energies	3	12	7	2	1	4
Organizational culture	7	12	7			4
Subsidies	9	8	7	2		4
Business association	2	8	9	6		3
Tax incentives	11	10	3	2		5
Export requirements	2	9	6	3		4

Table 2. Conditions of environmental improvement

In order to identify the conditions of environmental improvement the companies showed to be indifferent to business association, while they considered as important higher source control, use of "green" energies, change in organizational culture, subsidies and higher export requirements. However, they stressed tax incentives and an increase of legislation pressure as the necessary conditions for environmental improvement. In conclusion the companies identified a combination of passive and active techniques for achieving environmental improvement, although giving greater weight to the first.

2.7. Assumption of environmental costs

The huge majority of companies expressed to incur in environmental costs (figure 11).

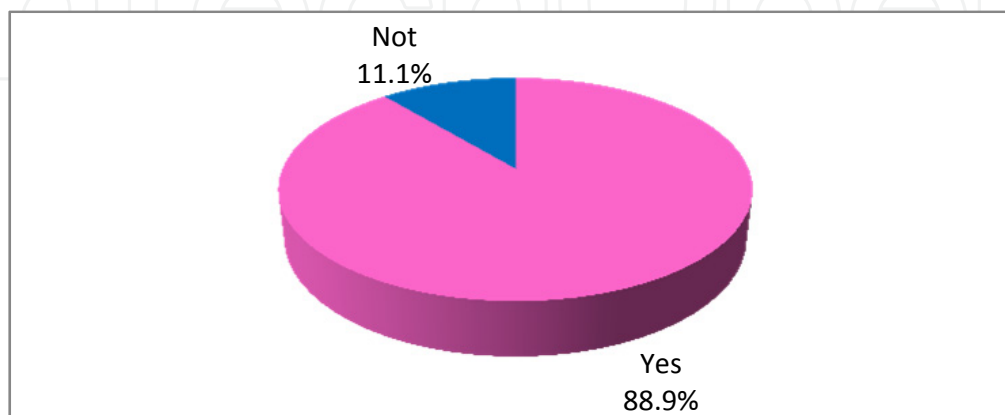


Figure 11. Assumption of environmental costs

2.8. Typology of environmental costs

There were a minority of firms that considered their environmental cost as only restorative, while the restorative and preventive attitude jointly was scarcely higher than the only preventive (figure 12).

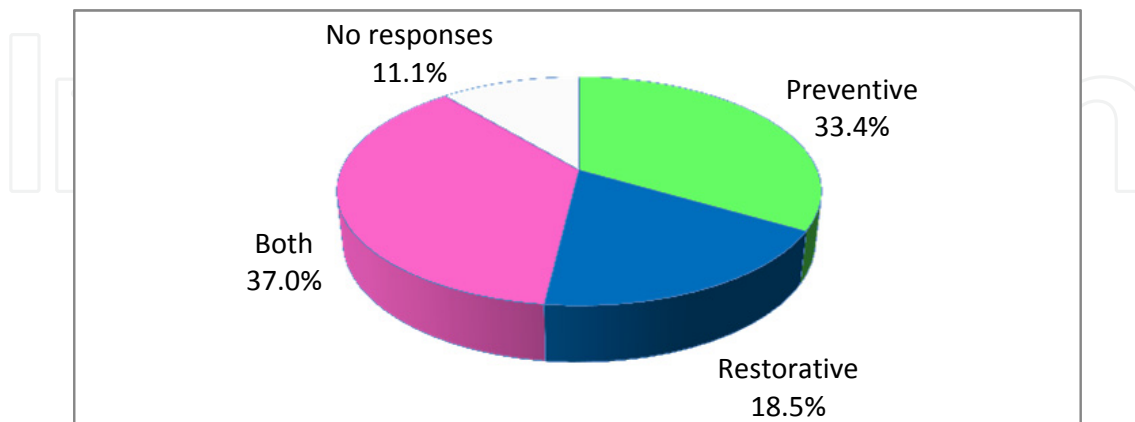


Figure 12. Typology of environmental costs

In order to check the congruity in companies' responses they were asked about the origin of their environmental costs (table 3).

Origin of environmental costs	Very agree (5)	Agree (4)	Indifferent (3)	Disagree (2)	Very disagree (1)	Mode
"Green" technologies	5	5	3	3	5	1,4,5
Redesign of processes	2	5	5	5	3	2,3,4
Ecological products		2	8	6	5	3
Environmental taxes	1	4	8	6	2	3
Treatment of waste	14	8			1	5
Control of discharges and emissions	8	14	2			4
Fines and penalties	1		2	4	13	1
Repair of damage	1	1	2	7	9	1
Implementation of EMS ¹		1				4

Table 3. Origin of environmental costs

The origin of environmental costs were mainly attributed to treatment of waste and control of discharges and emissions, so the restorative typology had greater weight of what companies were aware. This situation could be explained by the differences between business and academic language. Thus, the business language considered control of

¹ Environmental Management System

discharges and emissions as well as treatment of waste as preventive costs while it classified as restorative costs repair of damage and payment of fines and penalties. In short, it would be the difference between the academic “ex-ante” and the business “ex-post”. Academically is considered as preventive any action to that business activity will not produce environmental impacts, while professionally once has been the activity seeks to control and mitigate its impact.

2.9. Accounting consideration of environmental costs

Environmental costs were considered by the majority of firms according to their nature as expenses or investments. There were about one-third of companies that always considered them as expenses in period and a non-significant minority who considered them always as investment (figure 13).

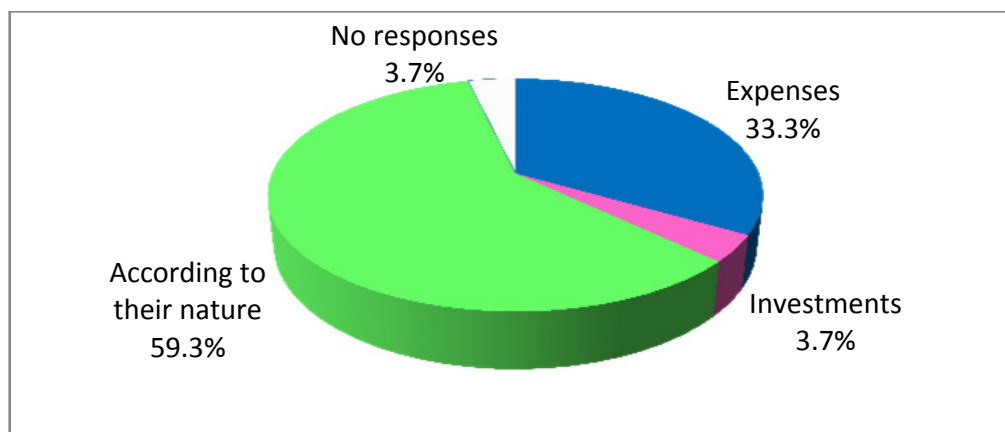


Figure 13. Accounting consideration of environmental costs

2.10. Environmental information in decision-making

More than a-half of companies took in account environmental information in decision-making, although the negative percentage of responses was very high (figure 14).

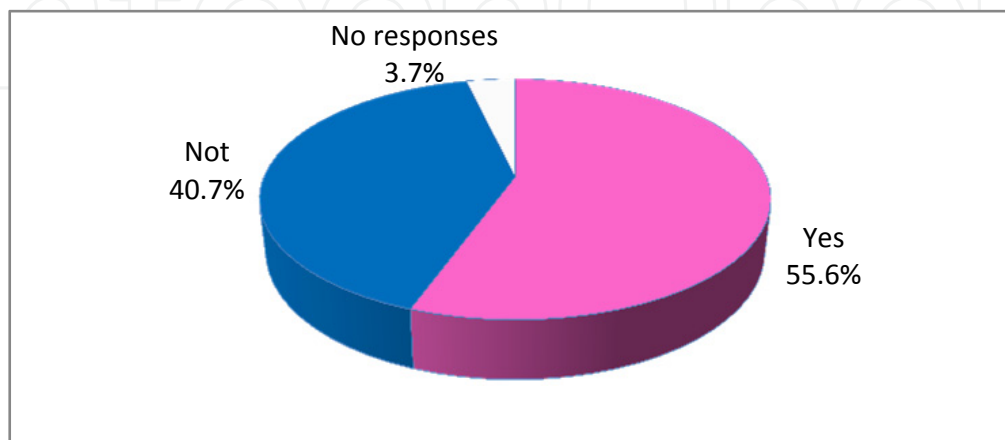


Figure 14. Environmental information in decision-making

2.11. Recognition of environmental responsibilities

The vast majority of companies replied to recognise environmental responsibilities (figure 15). In table 4 the causes of recognition of environmental responsibilities were analysed. The main reason for recognising environmental responsibilities was the compliance with legal regulations, although their environmental commitment and the image to their consumers were also argued causes.

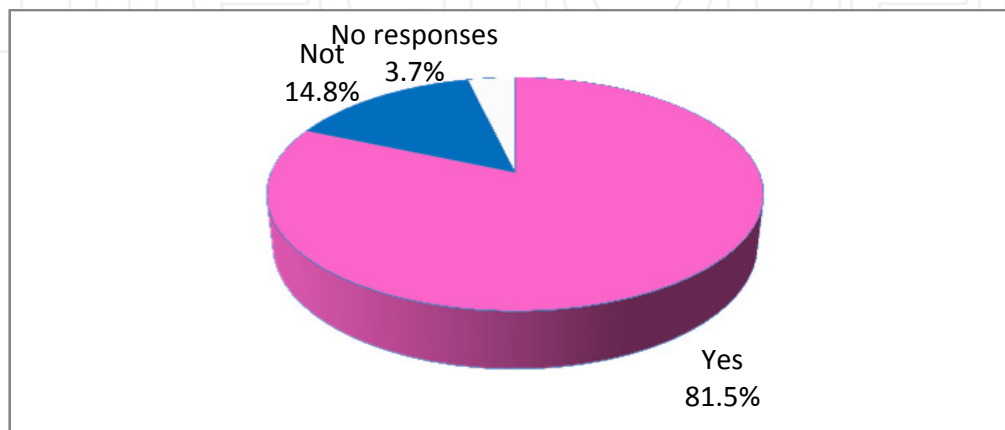


Figure 15. Recognition of environmental responsibilities

Causes of recognition of environmental responsibilities	Very agree (5)	Agree (4)	Indifferent (3)	Disagree (2)	Very disagree (1)	Mode
Legal imposition	13	8	1			5
Image to shareholders	2	7	9	1	2	3
Image to consumers	5	9	6	1		4
Environmental commitment	9	9	3	1		4 y 5
Accountability	1	5	9	2	1	3
Cost management	1	7	10	1	1	3
Environmental groups' pressure		1	8	4	7	3

Table 4. Causes of recognition of environmental responsibilities

2.12. Environmental provisions

The majority of respondents did not realise environmental provisions in their accounts (figure 16).

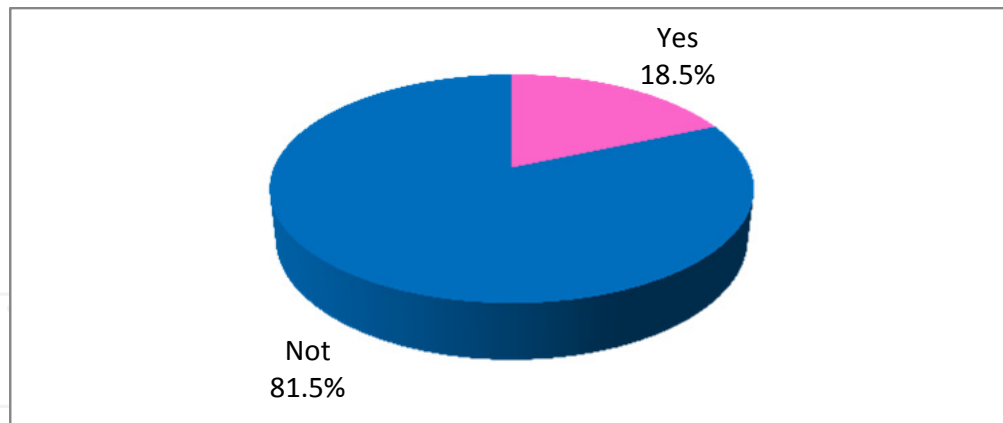


Figure 16. Environmental provisions

2.13. Environmental coverage

A non-significant percentage had contracted environmental coverage, whereas the wide majority of companies did not have them established (figure 17).

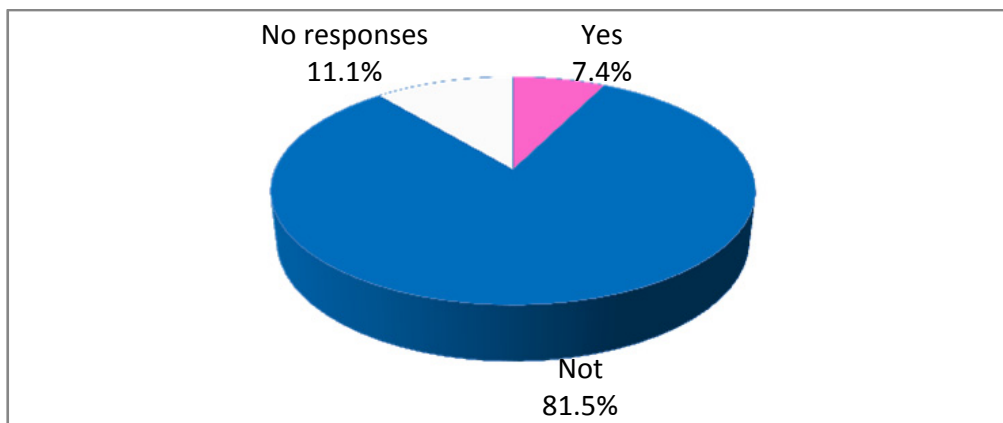


Figure 17. Environmental coverage

2.14. Environmental publication

In table 5 are listed the different documents that companies used to publish environmental information. The documents used to publish environmental information were mainly management report and environmental special reports. Notes was the other most frequently used, followed by the balance sheet document.

The causes argued for publishing environmental publication are described in table 6. The companies recognised as potential users of environmental information detailed in table 7. The potential users of environmental information recognised by companies were top management, non-governmental organization, public administrations, shareholders and executives of companies. They did not identify as potential users consumers, workers and public in general, which could be explained by the fact that those companies sell to middlemen vendors and not to the final consumer.

Documents	Yes	Not
Balance sheet	14.8%	85.2%
Profit and loss account	7.4%	92.6%
Notes	22.2%	77.8%
Management report	25.9%	74.1%
General report of society	7.4%	92.6%
Letter from the president		100%
Additional information	3.7%	96.3%
Environmental special reports	25.9%	74.1%

Table 5. Environmental publication documents

Causes of environmental publication	Very agree (5)	Agree (4)	Indifferent (3)	Disagree (2)	Very disagree (1)	Mode
Administration requirements	4	2	6	1	3	3
Parent company requirements	1	2	2		8	1
Improving business image	3	5	4	1	2	4
Prior to enforcement regulations	1		8	2	4	3
Increase of market share		2	5	4	3	3
Social responsibility	2	6	5	2		4
Improving management	4	5	4	1	1	4
Environmental awareness	1					5

Table 6. Causes of environmental publication

Potential users of environmental information	Very agree (5)	Agree (4)	Indifferent (3)	Disagree (2)	Very disagree (1)	Mode
Top management	7	10		2	1	4
Shareholders	3	10	2	2	2	4
Executives	2	9	6	2		4
Public administrations	6	8	5	2		4
Non-governmental organizations	8	5	5	2	1	5
Consumers	3	4	10	3	1	3
Workers	2	6	9	3		3
Public in general	2	4	6	6	2	2 y 3

Table 7. Potential users of environmental information

2.15. Findings of initial diagnosis

The environmental management was scarcely implemented and needed to be stimulated so that environmental concerns did not degenerate into a mere accumulation of good purposes. Thus, environmental management systems were rarely taken despite the wide said knowledge of the regulations relating to the environmental management. Unfortunately, the situation was not manifested a tendency to change in the near future, if not provided appropriate tax incentives and an increasing legislation pressure.

The companies considered that environmental variables represent a threat to the development of their activity, which is why established corporate environmental policies in their strategy, generally informal and without perception of accounting reflection.

Nevertheless, the previous hypothesis was that the level of formality of environmental policies should be correlated to the accounting statements reflection, but after calculating Pearson coefficient of correlation such evidence was not found. This result may be due to the conception of what companies meant accounting, reducing its size to a mere bookkeeping technique.

The development of environmental accounting was subject to compliance with legal requirements and to its use as a powerful weapon of business marketing; that in the majority of cases it came to draw up environmental information in an arbitrary manner, avoiding any kind of immediate relations that could set up such as the comparison between obtained results and environmental pursued objectives. In short, environmental accounting was being used as an instrument of legitimacy of the performances of the companies in their environment according to the tenets of Mouck (1995), Taylor et al., (2001) & Cho & Pattern (2007).

Companies recognised environmental responsibilities, which, however, did not seem to have had reflected in environmental provisioning, nor in the employ of another type of coverage by environmental risks. This was due, primarily, to that in a large number of cases the environmental concern was only conceived as a responsibility that attempted, largely, to pass on to third parties.

The inconsistencies expressed between explicit attitudes and actual actions on environmental issues would put revealed differences between the academic and business language. Thus, from the academic perspective the environmental commitment was conceived as a preventive measure while from a business perspective the majority approach is the restorative.

The publication of environmental information was performed, mainly in the management report and the environmental special reports, especially with the aim of improving business image and management as well as for reasons of social responsibility. However, companies not identified as stakeholders in such information to consumers, workers and public in general; which can be explained by the fact that these companies sell to intermediaries and not to the final consumer.

3. Case study research

The perceived incongruities in the initial diagnosis revealed that firms assumed to be highly environmental committed while from facts this commitment was not so high proved. So, it was necessary to introduce case study research methodology to clarify and understand the reasons of these inconsistencies.

The findings of case study research, like experiments, are able to be generalised to theoretical propositions and not to population or universes, because with this methodology the aim is to generalise theories (analytic generalisation) and not to enumerate frequencies (statistical generalisation) (Yin, 1994).

The case study research methodology recalls that a single case is analogous to a single experiment, so its use is accurate under the following circumstances. The first one, when it represents the critical case that can generate a significant contribution to knowledge theory-building, or it can even help to refocus future investigations in an entire field. The second one, in the circumstance of representing an extreme or unique case and the last circumstance is known as a revelatory case because a researcher has the opportunity to observe and analyse a phenomenon previously inaccessible to scientific investigation (Yin, 1994).

The criteria for choosing our case study research' firm were related to three main issues:

Firstly, the identification- in 2001- of a company with a really developed environmental management system and not a "good intentions" firm which had not formalised its environmental procedures. In our case, the ISO 14001 standard was used as a discriminatory criterion because there were no firms in the sector with EMAS verification (Environmental Management and Audit System) (European Communities, 2000).

Secondly, due to the fact that it was an interactive process, it was necessary to detect motivation by the company to participate in it. By using participant observation as a source of evidence in the case study research, the researcher interacts with the firm, so it was necessary to gain access to events or groups that were otherwise, inaccessible to scientific investigation. Unlike other research methodologies the data compilation in case study research demands several fields visits which imply many time dedication from the participating firms.

And finally, there was the importance given by the firm to environmental disclosures. This characteristic was really decisive because the huge majority of companies in the sector considered environmental issues as a matter which was only concerned of their own business, so they were not interested in disclosing environmental information. This particular firm considered that environmental disclosures meant a real commitment with its stakeholders or interested parts; therefore they were keen to disclose environmental information as an essential part of its environmental management system.

According to Yin (1994) we carried out the protocol of our case study research:

- Overview of the case study project. The findings of initial diagnosis served as a point of departure of the present case study.

- Case study questions. The questions were designed by adapting the questionnaire of our previous survey to its obtained conclusions and also, they were redefined for making suitable to the real context.
- Field procedures. Of the six sources recognised for evidence compilation, the following five were mainly used: direct observation, participant observation, documents, archives and interviews. Besides, physical evidence was used for recognising the operativeness of a particular database.
- Compilation of information. This research was conducted over a 7-month period from March to September 2001 and the information was compiled via on-site visits, as well as by e-mail and by telephone.
- Guide for case study report. During the process the firm had full information about its development and the different topics to be discussed in any of the on-site visits were determined beforehand, which allowed the firm to prepare all the documentation related to them.
- Case study draft. The last case study draft was given to the firm for approval in a final discussion meeting. In those issues where concurrence cannot be achieved, the different positions were clearly and objectively stated in the report.

3.1. Findings of case study research

The implementation of an environmental management system could be introduced to avoid the tightening of environmental regulations and to adopt continuous improvement strategies as an assurance of environmental performance. Some kind of environmental management usually existed in firms in a chaotic way and to formalise and to provide connections to that chaos involved a lot of effort and money. But, when there was a specific objective to be achieved, such as obtaining the environmental certification, it helped to make a swift progression from some technical environmental improvements to the configuration of an integrated environmental management system. The environmental certification acts as a guide to formalise the environmental management system and, therefore the willingness to achieve the environmental certification can stimulate the adoption of environmental management in any organization.

In the process of obtaining the environmental certification to transpose previous experience in quality management systems contributes to paperwork to be reduced and to failings and improvements to be detected more easily as Houthuysen (2000) obtained from his experience since later the system itself allows learning from it, as Pedersen & Nielsen (2000) found.

Accounting, as an internal information system, is considered to be very useful and it was recognised that the development of physical and financial indicators to configure a balanced scorecard would have improved the environmental management system. Although other business indicators previously existed in our firm, the development of environmental indicators had favoured the elaboration of a balanced scorecard that gathers economic and environmental ratios, which was clear proof of how the introduction of an integrated environmental management system improves business management.

Nevertheless, such company did not show any interest in disclosing any environmental information in the Annual Report, as evidence of the opacity and secrecy that exist within a sector characterised by a permanent technological innovation.

The strategy of the firm was based on a permanent rationalization process that involved adopting the latest technologies on the market. Thus, it had simultaneously implemented both the first and the second stage in the development of its environmental management system. This consists in applying the most obvious and sensible improvements, which have low costs, together with investments in the most innovative technologies on the market.

From the observation of the two main environmental indicators in the firm, we obtained that the trend of its environmental investments (table 8) corroborated the general strategy of the company since once technological changes has been adopted the financial payments decrease until a new technology is adopted, and the trend of its environmental expenses (table 9) placed our firm in an initial stage of environmental management development, where such expenses progressively increase.

Environmental investments (EI)	1995	1996	1997	1998	1999	2000	2001
(EI /Total investments)	18.05	0.00	37.37	25.08	8.00	4.90	1.98

Table 8. Environmental investments over the Period 1995-2001

Environmental expenses	1999	2000	2001
(expressed in euros)	258,832.65	45,846.76	62,735.99

Table 9. Environmental expenses over the Period 1999-2001

Environmental information had been gathered about the trends of its environmental investments since 1995 but its expenses data were only available from 1999 onwards because, prior so that, environmental expenses were not distinguished from the total expenses of the organisation.

The company considered that its environmental management system had to provide more competitive advantages than those that could be achieved by simply improving its own image. Therefore what the company should do the management of the production system more efficient by spreading the efficiency of the environmental department through the whole organization. Such efficiency would be based on a relevant information system that allowed the different business activities to be coordinated and that relied on the commitment of all human resources.

Whereas from the environmental strategy of the company derived that the environmental information system should be integrated at all business levels and it ought to be useful for decision-making as decision-usefulness theory states, its initial stage of development circumscribed it to specific projects, which are almost exclusively oriented towards obtaining funds such as subsidies or grants.

Again the inconsistencies appeared between the environmental position assumed in strategy and the environmental behaviour reflected in facts. This incongruities revealed that the company assumed to be highly environmental committed while from facts this commitment was no so high proved. Despite most of detected incongruities in our firm could be related to initial stages of implementation of environmental management systems, the one referring to disclosures cannot be explained in such terms. On this matter, the particular firm proclaimed that environmental disclosures meant a real commitment with its stakeholders or interested parts, but, the facts revealed that its environmental disclosures were restricted to particular responses to individual demands -as requested by ISO requirements- instead of providing general information, without considering environmental disclosure in Annual Reports.

Finally, even though our case fulfils the requirements for being considered as a rigorous case study research we are aware of the limitations of such methodology as possible bias in findings due to the researcher perceptions and values, the difficulty in designing case study research and the self-election of the participating company. Furthermore, this methodology enables to generalise findings to theory but not to the whole population.

4. Relationship between corporate social responsibility and financial performance

Following with our in-depth study we tried to analyse the effects of corporate social responsibility (CSR) in the financial results of the companies in the analysed sector.

Data were collected through personal interviews and using factor analysis the dimensions of the CSR were obtained. Subsequently, we analysed whether or not there were correlations between the factors and the financial indicators -collected from their Annual Accounts. Mahoney and Roberts (2007) found significant relationship between some measures of CSR and financial performance in their study, although they did not find any relationship between a unique index of CSR and financial performance.

From the population of the Spanish tile sector -255 companies in 2004- 70 firms were selected by simple random sampling, according to their size by volume of sales. Only 64 interviews were valid, so the analysis was restricted to them, being the size error of +/- 11% and the significance level of 95% ($p = q = 50\%$).

In order to carry out the factor analysis we tested Kaiser-Meyer-Olkin (KMO) and Bartlett's sphericity, -obtaining a KMO of 0.73 and rejection of the null hypothesis of the Bartlett's sphericity test- which allowed us to carry out the analysis. The method of extraction of factors was principal components, specifically, as we were primarily interested in the interpretation of the factors, the Varimax orthogonal rotation method was used. We obtained 6 eigenvalues greater than unit, therefore 6 factors (table 10), with an explained variance of 77.4%.

The analysis of correlation between the dimensions of CSR and the financial performance was conducted using the factors as indicators of the first and the financial performance

indicators were used as the following four ratios: return on assets, return on equity, return on sales and debt ratio.

Following with the inconsistencies between the environmental position assumed in strategy and the environmental behaviour reflected in facts by companies, we compared whether the CSR perception-self-evaluated from 1 to 5- of the companies corresponded with their CSR actions. Then, we carried out a correlation analysis between the score that the companies gave themselves and their score in each factor- excluding the question related to self-evaluation to avoid bias.

Factor 1	Socio-environmental objectives	Responsibles for results Socio-environmental results Resources for socio-environmental results Timetabling for implementation Socio-environmental incentives
Factor 2	Direct stakeholders	Suppliers Shareholders Customers Workers
Factor 3	Indirect stakeholders	Non-profit organizations General public Public administrations Consumers Competitors
Factor 4	Selection of suppliers or customer	In relation to compliance with their socio-environmental objectives
Factor 5	Compliance check	Certifications Socio-environmental management system External quality audit Socio-environmental publication Control of socio-environmental results
Factor 6	Impact limitation and self-evaluation	Socio-environmental policy Socio-environmental evaluation Socio-environmental provisions Responsible for product design

Table 10. Dimensions of CSR

4.1. Findings of relationship between CSR and financial performance

From the analysis of correlation between the factors of CSR and the financial ratios three results were obtained:

1. Factor 2 (direct stakeholders) had a positive correlation with return on equity (p-value = 0.26, significant at 5%) and marginally with the debt ratio (p-value = 0.22, significant at 10%).
2. Factor 4 (supplier selection) had a negative correlation with return on assets (p-value = -0.29, significant at 5%) and with return on sales (p-value = -0.27, significant at 5%), and marginally with return on equity (p-value = -0.21, significant at 10%).
3. Factor 5 (compliance check) had a positive correlation with the debt ratio (p-value = 0.25, significant at 5%).

From these results we could extract the hypothesis that both taking into account the consequences of the decisions of companies on their direct stakeholders such as the use of instruments to check compliance of socio-environmental commitments could require additional resources that would be reflected in a higher debt ratio in these companies. These results would validate the available funds theory (McGuire et al., 1988 & Moore, 2001) which postulates that companies with abundant financial resources have more opportunities to carry out CSR initiatives. Besides, taking into consideration the close relationship with their direct stakeholders it would be also rewarded with greater return on equity, which positioned these companies in the moderation model of Berman et al. (1999), where the company strategy has a direct impact on the financial performance although it is moderated by the relationship with their stakeholders.

Furthermore, the positive correlation between factor 5 (compliance check) and the debt ratio could be explained by the fact that companies who need to rely on external financing must meet certain socio-environmental requirements to obtain it, as Roberts (1992) found.

On the other hand, companies that stated a policy of supplier selection by socio-environmental criteria seemed to be penalised with lower return on assets, sales and equity. Due to only 9 of the 64 companies had a high score in factor 4 (supplier selection) the results seemed to indicate rather an absence of penalties for companies who had not such supplier selection.

As factor 2 (direct stakeholders) provided evidence for the hypothesis of positive synergy, while factor 4 (supplier selection) did so in favour of the negative synergy, the behaviour of companies could not be characterised according to the typology of Preston & O'Bannon (1997). Hence, further studies will be required to determine whether the difference in sign is a particular feature of the industrial sector analysed or, on the contrary, it is present in other sectors.

From the analysis of correlation between the score that the companies gave themselves and their score in each factor two results were obtained:

1. Factor 2 (direct stakeholders) had a positive correlation with the CSR self-evaluation ratio (p-value = 0.21, significant at 5%).
2. Factor 6 (impact limitation) had a positive correlation the CSR self-evaluation ratio (p-value = 0.21, significant at 5%).

The positive correlation between the CSR self-evaluation and the CSR actions directed to their stakeholders could be explained by the need for legitimacy of the companies in their

environment, corroborating the stakeholder theory (Freeman, 1984 & Suchman, 1995). On the other hand, it seemed sensible that companies taking measures to limit their impacts would have considered that they were making greater efforts in CSR, so they gave themselves higher scores.

5. Conclusions

The environmental management in the Spanish tiles sector needs to be stimulated, due to companies are adopting it for reasons of competitiveness that do not exceed legal imposition, environmental commitment and business image and forgetting the integrated management of resources. Which is why established corporate environmental policies in their strategy, generally informal and without perception of accounting reflection. This result may be due to the conception of what companies meant accounting, reducing its size to a mere bookkeeping technique.

The environmental certification acts in the sector as a guide to formalise the environmental management system and, therefore the willingness to achieve the environmental certification can stimulate the adoption of environmental management in any organization.

The development of environmental accounting was subject to compliance with legal requirements and to its use as a powerful weapon of business marketing; that in the majority of cases it came to draw up environmental information in an arbitrary manner, avoiding any kind of immediate relations that could set up such as the comparison between obtained results and environmental pursued objectives. In short, environmental accounting was being used as an instrument of legitimacy of the performances of the companies in their environment, as it defends the theory of stakeholders.

There is no interest in disclosing any environmental information in the Annual Report, as evidence of the opacity and secrecy that exist within a sector characterised by a permanent technological innovation. Although, internal accounting is considered to be useful and the development of environmental indicators to configure a balanced scorecard have improved the environmental management system and, furthermore it has favoured the elaboration of a balanced scorecard that gathers economic and environmental ratios, which is proof of how the introduction of an integrated environmental management system improves business management.

The strategy of the sector involves adopting the latest technologies on the market. Thus, it had simultaneously implemented both the first and the second stage in the development of its environmental management system, which consists in applying the most obvious and sensible improvements, which have low costs, together with investments in the most innovative technologies on the market.

Although the environmental management system should be integrated at all business levels and it ought to be useful for decision-making as decision-usefulness theory states, the actual stage of development circumscribed it to specific projects, which are almost orientated towards obtaining funds such subsidies or grants.

We can extract the hypothesis that both taking into account the consequences of decisions on their direct stakeholders such as the instruments of checking compliance of socio-environmental commitments could require additional resources that would be reflected in a higher debt ratio, validating the available funds theory. Besides, the closest relationship with their stakeholders would be also rewarded with greater return on equity, as the moderation model of Berman et al. (1999) holds. We also obtained evidences that the instruments of checking compliance were correlated with debt ratio, which could be explained by the fact that companies who need to rely on external financing must meet certain socio-environmental requirements as Roberts (1992) found.

There are some incongruities between the environmental position assumed in strategy and the environmental behaviour reflected in facts in the sector, so from the analysis of correlation between the score that the companies gave themselves and their score in each CSR factor it was obtained a positive correlation between CSR self-evaluation and direct stakeholders as well as impact limitation. The correlation with stakeholders corroborates the stakeholder theory and the correlation with impact limitation could be explained by the fact that companies which are taking measures to limit their impacts generally consider that they are making greater efforts in CSR, so they gave themselves higher scores.

Further studies will be required to determine whether the obtained evidences are a particular feature of the Spanish tiles sector, or on the contrary, some of them could be extrapolated to other sectors.

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