

Stakeholder influence on environmental proactivity of Brazilian companies

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Abstract

This paper analyzes stakeholders influences on environmental proactivity of Brazilian companies. Research related to 112 Brazilian companies was undertaken to test the hypothesis that stakeholders pressure has a positive influence on company environmental management activities. Factorial analysis grouped the stakeholders into two categories called “market” and “non-market”. The market category involves those stakeholders which participate directly into the supply chain and includes suppliers, clients, international and domestic competitors, employees, subcontractors and unions. “Non-market” stakeholders, in turn, are those which do not participate directly in the supply chain such as shareholders, government, media and NGOs. Econometric models demonstrated that stakeholders exert significant and positive pressure on environmental proactivity actions, related planning, operations and communication practices. This pressure is more effective when coming from the so-called “non-market” stakeholders, which indirectly influence the organizations. The paper shows that sustainability ideas and practices are increasingly present on stakeholder agendas, which are starting to acknowledge their interdependences and their power to influence companies to adopt proactive environmental practices.

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1. INTRODUCTION

Scott and Meyer (1991) stated that organizations operate within an institutional framework that establishes regulations and general operating environment. The institutional framework is dynamic and reflects specific pressures from society, business or government directed at a particular actor (company). As a result, the company may initiate certain practices not undertaken earlier, change practices related to a particular area of responsibility or stop a certain action.

Companies are subjected to different types and degrees of pressure depending on their organizational characteristics and the particularities of the institutional framework within which they operate. Company responses can range from proactive to reactive environmental behavior. Environmental proactivity is characterized as a strategic position accepting risks and challenges of the new sustainability paradigm. Proactive companies take actions that go beyond compliance with legal requirements to minimize environmental impact of their operations.

Companies may explore opportunities to reposition their image, attract consumers who are sympathetic to environmental causes and develop innovative processes that mitigate trade-offs among economic, social and environmental issues (Sanches, 2000, González-Benito; González-Benito, 2006).

Buyse and Verbeke (2003) pointed out that organizations are pressured to respond to market demands in the way stakeholders expect. Ferraz and Mota (2002) tested a model in which the stakeholder pressures are divided along two lines: formal and informal. Formal pressures flow from regulation and surveillance entities through warnings, fines and loss of environmental licensing. On the other hand, informal pressure is exerted by other stakeholders (in particular community based groups), through market actions or complaints which may lead to reduced consumption of a company's product or service.

This paper presents an empirical assessment of the positive stakeholders influence on environmental proactivity of Brazilian companies. It is based on a survey of 112 companies operating in Brazil, applying an econometric model to measure the influence of “market” stakeholder and “non-market” stakeholder. Husted and Allen (2011) define “market” stakeholders as those that have direct links with organizational performance. In turn, “Non-market” stakeholders are those involved in the societal dimension of corporate activities.

The study shows that stakeholders play a major

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role in the construction of a proactive environmental management framework along with business, government and society in general. This research shows the importance to define an environmental policy aiming to enhance the relationship with society and further improve the environmental performance.

The next section of this paper reviews explore the theoretical framework which includes stakeholders pressures and proactive environmental management models. Then, the methodology used to develop the survey among Brazilian companies is explained. We continue with a description of the results of the empirical study. Finally, we discussed the results to develop insights about stakeholder and finally, the conclusion presents the main contributions of this research.

2. THEORETICAL FRAMEWORK

2.1. Role of Stakeholders as Agents of Environmental Pressure on Organizations

Before turning to the literature to discuss what stakeholders are and how they are linked to organizational understanding, a very relevant conceptual positioning issue needs to be raised: for what and for whom is a private company responsible? Or, “the principle of what or who really matters”, in accordance with Freeman’s perspective (1994). Barbieri and Cajazeira (2009) offer a comprehensive explanation for this discussion when they confront the discourse of the American economist (and Nobel Prize winner in the category) Milton Friedman (1982), based on the work of classical economists (Smith, Ricardo) and their logic that considers the unilateral responsibility towards the stockholder with the position defended, among others, by Berle and Means (1984).

The latter highlight the need to understand the multilateral nature of the issue, based on the multiple proportions of the impact corporate actions exert, so that the responsibility is not towards who has interests, but towards who is subject to impacts (SAVAGE *et. al.*, 1991). This understanding of multiple “interests” evolved to the consideration of different “stakeholders” related to an organization. According to Barbieri and Cajazeira (2009), organizations, as systemic elements, consist of a series of actors that interact within and beyond their physical limits and on the whole, are called stakeholders in the administrative context.

The definitions of stakeholders (interested parties) indicate the complexity of the individuals who are active or passively involved in the company and its business. Considered a classical author on the theme, Freeman (1984) conceptualized these interested parties as all individuals, groups of individuals or other organizations that can interfere or suffer interference because of a certain organization’s activities. Clarkson (1995) defines stakeholders as people or groups that hold or require participation, rights or interests in the corporation and in its activities. Such claims for rights or interests derive from transactions or actions taken by the organizations and can be legal or moral, individual or collective.

Among the multiple attempts to classify stakeholders, the proposal by Atkinson and Waterhouse (1997) should be highlighted, which is similar to the proposal by Clarkson (1995), in which the stakeholders are divided between primary and secondary. Primary stakeholders are

directly linked with organizational survival. Secondary stakeholders, despite some degree of importance for the organization, do not compromise its existence.

Carrol and Nasi (1997) suggest the stakeholders’ position towards the border between the company and the external environment as a classification criterion. The internal stakeholders are part of the organizational structure, such as owners, managers and employees, and the external stakeholders are all actors that are not part of the organization but interact with it, including competitors, government, consumers, community, media and environment.

In their study, Buysse and Verbeke (2003) present a distinction in four categories of stakeholders. The category of internal primary stakeholders includes employees, shareholders and financial institutions. That of external primary stakeholders comprises domestic and international consumers and suppliers. The third category is that of the secondary stakeholders, involving (national and foreign) competitors, international institutions, NGOs and the media; and, finally, regulatory stakeholders, which are governments and public agencies.

After establishing the multiple interests a company may be related to, one needs to move further in order to understand what relations these are and how they can affect an organization’s activities. In some studies, the figure of the stakeholder receives a relatively important role in the analyses about decision cores inside organizations, like in Husted and Allen (2001) and in Mitchel, Agle and Wood (1997), in view of the range of interested parties’ different influence levels, both mutually and between the stakeholders and the company itself.

Some authors (Lyra; Gomes; Jacovine, 2009; Savage Et Al, 1991; Charron, 2007) highlight the role of the need for a good relationship between the company and its stakeholders for the sake of its longevity. The interested parties at different levels cooperate with a view to the effective organization, performance and control of organizational entities, providing resources, generating demands and assessing their actions, creating a context of crucial interrelationship with a view to companies’ survival.

Stakeholders require integrity, respect, standards, transparency and results (Waddock et al, 2003). Thus, company actions are conditioned by the pressures received and perceived by their stakeholders. Abreu *et. al.* (2004) distinguishes three categories of environmental pressure: the pressure from environmental legislation, from environmental impacts and from the stakeholders’ environmental demands. The first pressure category relates to the quality of environmental legislation and the strictness of its surveillance. Hence, the more specific and severe the environmental standards and the stricter the surveillance, the stronger this type of pressure will be. Abreu (2009) indicates Brazilian particularities, such as regional and state differences in legislation and surveillance levels and the fragmentation of legal diplomas ruling the environmental sector and the different supervisory entities in the federal, state and municipal spheres.

This Brazilian characteristic results in the need for complex control of environmental legislation information, making some companies hire specialized consulting services in the area (Castro Neto *et. al.* 2011). On the other hand, the pressure of environmental legislation is considered beneficial to the industry, provided that it is well regulated and supervised, as it truly forces organizations towards innovation and

creativity in solving the bottlenecks this type of pressure produces (Porter, 1999).

The second category, pressure from environmental impacts, is related to the environmental risks associated with the nature of the industrial activity. In an analysis developed by BNDES (Bergamini JR, 2003), the industrial sectors are divided in three segments, according to the environmental risk they offer. Category A (highest risk) includes, for example, metallurgy, iron and steel, petrochemical and pulp industries. Examples of category B, classified as intermediary risk, include the textile, metal-mechanic and beverage sectors. Considered as low environmental risk, industries in category C include confection and clothing companies.

As regards the environmental impacts, Delmas (2002) underlines the importance of an Environmental Management System (EMS) and environmental certifications (ISO 14001, for example), to map the environmental risks inherent in the operation as well as to manage them through environmental audits and permanent analysis of production processes.

Finally, the third environmental pressure category, which refers to the interested parties' environmental requirements, is based on the stakeholders' capacity to influence the organization, changing its conduct and environmental performance. The stakeholders' analysis is closely related with the monitoring of the environment the company is located in and the understanding of the influence the parties interacting in this environment exert in the organization. This analysis is also influenced by how this influence takes place. This illustrates the relevance of mapping the elements that interact with the organization and the mutual influence between the company and its interested parties (Charron, 2007).

Based on the context of these interested parties' characteristics related to the organization's functions, Sousa and Almeida (2003) consider two categories in their degree of voluntariness: one active and the other passive. Active stakeholders are entitled to intrinsic rights, as propriety grants them legitimate and formal interests to the company through a voluntary relationship with the organization. On the other hand, the interested parties are passive when a relation exists in which they need to take a stand towards an organization so as not to be impaired by its operations.

This reveals the theoretical understanding that an organization is directly related to the existence of the stakeholders in its environment, and the understanding of this fact implies the minimal condition to allow an organization to start managing this important relation with its environment, enhancing opportunities and mitigating inherent risks (Savage Et Al, 1991; Bourne And Walker (2005). Given the evolution in organizations' understanding and treatment of environmental issues and different possible routes to advance in this area, corporate responsibility today faces far more complex demands than some years earlier (Arora; Cason, 1996).

According to González-Benito and González-Benito (2005), three arguments support environmentally proactive practices in a company, society's growing environmental awareness and the organization's respective temerity towards image and reputation issues, the effect of operational optimization deriving from environmental efficiency practices and, finally, the ethical inquiries faced by the owners, managers and shareholders of the companies they are affiliated with.

Souza (2002) endorses this reflection, admitting

that legal pressures, image issues and the appeal of primary and secondary stakeholders for organizations to minimize their environmental impact guide corporate environmental management. Hence, the advancement in environmental management has led to the development of a concept in the area that distinguishes the motivation of organizations' environmentally sustainable actions and studies the reflections of this changed scenario on their social positioning towards the environment.

2.2. Environmental Management as a Result of Stakeholders' Environmental Pressure

Henriques and Sardosky (1996) theoretically established environmental proactivity as a category applicable to all companies that "simply had an official plan to deal with environmental issues". It is important to highlight that the motivational nature of environmental action, which is today considered as the watershed between reactivity and proactivity, is not even superficially invoked. In that context, the legitimacy of the process is underlined in the concept. The concern with an official plan indicates the urgency of disclosing environmental management as a professional, planned and controlled activity.

Berry and Rondinely (1998) raise the concept to a more modern level when they distinguish their "three stage in the revolution of environmental thinking": business policies without any environmental concern (until the end of the 1970's), compliance policies with environmental rules, developed in the 1980's, and the new strategic policy profile involving environmental management in the 1990's.

Sanches (2000) refers to the generalized concept of self-regulation in management to enter the concept of proactivity. Here, environmental management is internalized as a management process and, therefore, considered as a "strategic policy factor", participating in company planning and contributing to abandon the perspective of mere legal compliance.

González-Benito (2009) refers to the term not only as actions to promote the administration of natural resources, but also to its improvement and enhancement. This reflects of post-internalization stage of the concept and the maturing of environmental management. In this sense, González-Benito and González-Benito (2006) define environmental proactivity as a set of practices, which companies put in practice voluntarily to improve their environmental performance, manifested through different strategies, divided in three categories of planning, operation and communication practices.

Organizational and planning practices reflect the extent to which the environmental management system has been implemented. It involves the definition of the environmental policy, objectives and targets, the definition of responsibilities and the selection of employees working with environmental management. It also comprises the environmental training and awareness program for managers and operators, and the definition of indicators that are capable of measuring and assessing environmental performance. The environmental management system does not only mitigate environmental damage, but also establishes mechanisms that allow the company to advance in a coordinated and systematic manner.

Operational practices imply changes in the operation and production systems. These practices can be related to

the product or the process. In the first case, they involve the project of “environmentally correct” products. To give an example, practices are defined that are focused on the reduction of pollutants or toxic products; on the reduction of water or energy consumption; on the expansion of the product recycling or remanufacturing capacity. The second group is focused on the development of more “environmentally conscious” operational processes and methods. Some of these practices affect the internal processes and incorporate remediation and control practices (e.g. installation of filters or effluent treatment stations) into pollution prevention practices. Other practices affect the external processes (e.g. definition of criteria to select suppliers or the use of recyclable materials in packing) and influence the supply and distribution chains.

Finally, communication practices involve not only reports on the companies’ financial performance, but also on its social and environmental impacts. These practices intend to communicate the actions the company takes in favor of the environment. Although they are important from a commercial or marketing viewpoint, they do not significantly contribute to improve the environmental performance. On the other hand, the stakeholders appreciate these practices and they are important to define the image of and opinion on the company’s environmental performance.

González-Benito and González-Benito (2010) once again address the theme and propose environmental proactivity as an “essential variable in modern competitive scenarios”, consolidating the motivation factor as the distinction between “minimal compulsory alterations resulting from compliance with legal rules” (environmental reactivity or zero environmental proactivity) and “voluntary measures taken to reduce the company’s environmental impact”.

Thus, although legal regulation cannot be considered an important and decisive factor yet in the business process in the area, it can no longer be taken as an isolated imperative. In their extensive literature in the area, González-Benito and González-Benito (2006) report that organizations normally take a stand towards socio-environmental issues through a reactivity-proactivity continuum.

Criticism against the environmental proactivity concept involves organizations’ behavior beyond legal requirements. Difficulties include the multiple and fragmented legal diplomas in the area, as well as the varying legal perspectives of the different activity branches and professional sectors. Environmental proactivity needs to be considered as a regular or emerging corporate strategy that participates in corporate planning, and not associate it in a core plan as volunteering.

Environmental proactivity is aligned with different theoretical approaches, including the “New Approach” (Donaire, 1994; Porter; Linde, 1995), strategic environmentalism (Hoffman, 1999), the category of activist companies (Brockhoff; Chakrabarti, 1999), the need for repositioning and use of innovation (Porter; Linde, 1995), the creation of sustainable value (Hart; Milstein, 2003) and the strategic policy profile (Berry; Rondinelli, 1998).

In this study, environmental proactivity is defended as a modern stage of environmental management organizations have adhered to in order to adapt to the contemporaneous demands of the triple bottom line and, at the same time, advance in the market in competitive terms and with a focus on results. On the other hand,

environmental reactivity is the corporate behavior model in which the environmental issue in companies is merely considered as a liability, an obligation, from the viewpoint of a trade-off.

Based on the theoretical framework, the hypothesis is defended that environmental proactivity is motivated by environmental pressure. The interested parties put pressure on the organization to control the environmental impact and environmentally responsible action according to the sustainability paradigm. The organization reacts to this pressure as a strategy to defend its image, market position and as an agent to solve the demands it is confronted with, focusing its administrative intelligence on proactive environmental management foci, in response to the pressure it receives.

3. METHOD

In this exploratory research, a quantitative strategy is applied by means of a survey. According to Martins and Teóphilo (2007), surveys are appropriate for those cases in which the researcher wants to answer questions about the distribution of a variable. Econometric analysis based on simple and multiple regression was chosen, supported by exploratory factorial analysis. The regression models tested the effect of stakeholders’ pressure (independent variables) on environmental proactivity (dependent variable), according to the research by González-Benito and González-Benito (2006, 2010).

The data collection instrument for this research was divided in two parts. In the first part, 19 possible stakeholders were listed for the interview to score its influence on the company’s environmental proactivity. Five-point Likert questions were defined to measure the intensity of the pressure this extensive set of stakeholders exerts, in which the interviewees answers on a scale from 1 “very weak pressure” to 5 “very strong pressure”.

In the second part of the data collection instrument, environmental proactivity questions were listed, according to the model by González-Benito and González-Benito (2006). Questions were developed about the planning, operations and communication practices implemented in the company. The questions about “planning practices” measure the organizational structure needed to establish a proactive environmental management system. When “operational practices” have been systematically implemented, the company can inform the stakeholders about its advances and efforts to improve its environmental performance through “communication practices”. In the study, a Likert scale was used, ranging between 1 “practice not implemented” and 5 “fully implemented practice”.

The study population consisted of companies that are active in Brazil. A pilot study was undertaken, in which ten companies were interviewed. Then, the corrections needed were made in order to adapt the questionnaire to the research objective. For data collection, the questionnaire was made available on the link of the University of Cambridge Institute for Manufacturing (IfM). The data collection process started when the company managers were contacted by telephone to ask them to answer the research, after which the research link was forwarded by e-mail. The research was available on the IfM website between January and October 2009.

The research resulted in a survey of 112 fully answered

forms, based on 2,189 accesses. Those cases in which no company or respondent information was available were excluded. Finally, cases of repeated companies/industries were identified, in which the respondent with the highest function was maintained, preferably related to the environment, health and safety department. According to Hair et al. (2009), the sample size (112 cases) permits both factorial analysis and econometric modeling.

Data treatment started with the verification of missing values and outliers. No cases were found for any of these two. The Kolmogorov-Smirnov test was applied to identify data normality. None of the indicators used showed univariate normality, justified by the fact that the collected data followed the Likert scale format, on a five-point scale.

Bartlett's sphericity test was employed, which tests the hypothesis that the data constitute an identity matrix, as well as the KMO – Kaiser-Meyer-Olkin test, which assesses whether the partial correlations between the variables are small. According to Hair et al. (2009), a statistically significant Bartlett sphericity test (p-value < 0.05) indicates that the variables are sufficiently correlated to proceed with the analysis.

Next, exploratory factorial analysis was undertaken. Factorial analysis explores the hypothesis that latent dimensions can explain complex phenomena. This multivariate analysis technique identifies latent factors that are not directly observable, based on a set of observable variables (Hair et al., 2009; Gosling; Gonçalves, 2003). The hypotheses underlying the factorial analysis are more conceptual than statistical (Hair et al., 2009).

There are two ways of choosing the number of factors to be considered in a factorial analysis. The first is to use statistical criteria, produced in the analysis, to make the decision. One example is the most common criterion, which is the eigenvalue, considering those factors with an eigenvalue higher than one, or the percentage of explained total variance which, in social sciences, can even be lower than 60%.

The second way of choosing the number of factors to be considered is to specify the number of factors that need to be generated, used when researchers have a theoretical reference framework on the issue or preliminary evidence they want to validate (HAIR et al., 2009). In this study, this criterion was adopted, considering only those variables with a factor loading higher than 0.5. Hair et al. (2009) report that, although factor loadings between 0.3 and 0.4 are minimally acceptable, values superior to 0.5 are generally considered necessary for the sake of the practical significance of the indicators for each factor generated.

The factorial analysis supported the construction of the independent variables: Market Stakeholder (Stk_{mkt}) and Non-market Stakeholder (Stk_{Nmkt}) and the dependent variables: environmental proactivity (EMS), and proactivity disaggregated into planning ($EMS_{planning}$), operation ($EMS_{operation}$) and communication ($EMS_{communication}$) practices. These variables were calculated as the simple arithmetic means of the questions related to the factor generated, resulting in a sole discrete value for each research respondent.

Initially, a simple regression model (model 1S) was applied to measure the influence of the market stakeholders on environmental proactivity. Next, the non-market stakeholder variable was added, resulting in a multiple regression model (1M model). This procedure

was repeated for models 2, 3 and 4, which measures the (market and non-market) stakeholders' influence on the planning, operation and communication practices, respectively. Thus, the theoretical and methodological approach serves to test the proposed models based on the following hypotheses:

Model 1 – Aggregated effect of stakeholders on environmental proactivity

$$(S) > EMS_i = \beta_0 + \beta_1 Stk_{mkti} + \mu_i$$

$$(M) > EMS_i = \beta_0 + \beta_1 Stk_{mkti} + \beta_2 Stk_{Nmkti} + \mu_i$$

H1: Does stakeholders' pressure exert positive influence on environmental proactivity in Brazilian companies?

Model 2 – Effect of stakeholders on the adoption of environmental planning practices

$$(S) > EMS_{planningi} = \beta_0 + \beta_1 Stk_{mkti} + \mu_i,$$

$$(M) > EMS_{planningi} = \beta_0 + \beta_1 Stk_{mkti} + \beta_2 Stk_{Nmkti} + \mu_i,$$

H2: Does stakeholders' pressure exert positive influence on the adoption of environmental practices in Brazilian companies?

Model 3 – Effect of stakeholders on the adoption of operational practices

$$(S) > EMS_{operationi} = \beta_0 + \beta_1 Stk_{mkti} + \mu_i,$$

$$(M) > EMS_{operationi} = \beta_0 + \beta_1 Stk_{mkti} + \beta_2 Stk_{Nmkti} + \mu_i,$$

H3: Does stakeholders' pressure exert positive influence on the adoption of operational practices in Brazilian companies?

Model 4 – Effect of stakeholders on the adoption of communication practices

$$(S) > EMS_{communicationi} = \beta_0 + \beta_1 Stk_{mkti} + \mu_i,$$

$$(M) > EMS_{communicationi} = \beta_0 + \beta_1 Stk_{mkti} + \beta_2 Stk_{Nmkti} + \mu_i,$$

H4: Does stakeholders' pressure exert positive influence on the adoption of communication practices in Brazilian companies?

The presentation of the results starts with a general view of the companies that participated in the research, followed by the results of the econometric models.

4. RESULTS

Table 1 displays the profile of the companies that participated in the research. A limited participation of small companies is observed (19.6%), while that of medium and large companies is very similar, with 42% of the companies classified as medium and 38.4% with more than 500 employees. It is also interesting to note that 25% of the companies have 1,000 or more employees, indicating the participation of international and/or multinational companies.

Table 1. Number of employees in the companies

Number of employees	Qty.	%
Less than 100	22	19.6
Between 101 and 500	47	42.0
Between 501 and 1,000	15	13.4
Between 1,000 and 5,000	22	19.6
More than 5,000	6	5.4
Total	112	100.0

Source: Field research data

The company's industrial activity and size indicate the organization's impact of the context it is inserted in. Distributed per industrial activity, the companies are especially concentrated in chemical manufacturing (27.7%), as the sole predominant activity among the respondents, followed by metallurgy companies with 8% and textile companies with 6.3%. The remainder is distributed across all industrial activity sectors.

The main product consumption market is internal, absorbing between 76% and 100% in more than half of the companies investigated (54.5%). The large number of chemical companies explains this fact. According to data from the National Pact of the Chemical Industry, published by the Brazilian Association of the Chemical Industry - Abiquim (2010), in 2008, these exported only 9.84% of their total production. It should also be observed that, despite representing a relatively small sales percentage, the products manufactured by the organizations under analysis are traded on the external market.

The exploratory factorial analysis divided the stakeholders in two factors, according to the results presented in Table 2. Market stakeholders exert more direct influence, due to the greater proximity with company business. According to the factorial analysis, this category includes the domestic and international suppliers, clients and competitors, employees, subcontractors and unions. The non-market stakeholders, in turn, indirectly influence company business. According to the test, this category comprises the investors, funders, environmental surveillance agencies, international entities, NGOs, industrial organizations, media, local community, indigenous communities and relatives/friends.

The factorial analysis results were very satisfactory and able to distinguish the companies in groups, in accordance with the literature. In the group of market stakeholders, only the unions seem to go against the most influential set. Normally, unions are more influential in labor issues and other questions related to the quality of the occupational conditions for its members.

As for the group of non-market stakeholders, the investors' position was surprising. Normally, these stakeholders are concentrated in the market stakeholders group, given their power to influence the directions of the organization and their contribution of financial resources to the company. One possible explanation is that most research participants are large and publicly traded and predominantly concentrate international investors. Therefore, this interested party is not directly linked to

the company's operational activities.

Table 2. Exploratory factorial analysis of stakeholders' influence on companies' environmental proactivity

Questions	Components	
	Market	Non-market
International Suppliers	.567	
Domestic Suppliers	.620	
Employees	.524	
Subcontractors	.539	
External Competitors	.475	
Internal Competitors	.696	
External Market Clients	.409	
Internal Market Clients	.740	
Unions	.468	
Investors		.556
Funding Agents		.488
Environmental Surveillance Agency		.558
International Entities		.729
NGO's		.757
Industrial Associations		.533
Media		.778
Local Community		.751
Indigenous Communities		.651
Relatives and Friends		.535

Source: Research data processed in SPSS for Windows - v. 17.0

The factorial analysis results are displayed in Table 3, which considered the adherence of the group of environmental proactivity dimensions established in the model by González-Benito e González-Benito (2006). Environmental proactivity is divided in three factors, called planning, operations and communication practices.

Planning practices refer to the environmental positioning strategies the company intends to follow. They include, for example, the establishment of the environmental policy and the definition of environmental criteria for operational processes. Factors like investments in consumption reduction technologies and recycling and consumption programs for the resources involved in the production process, as well as the modification of product projects for the sake of operational efficiency, fit into the operational dimension. Finally, the elements related to the publication of environmental accountability reports and the use of propaganda based on environmental sustainability results were joined in the communication dimension of environmental proactivity.

Table 3. Exploratory factor analysis of environmental proactivity practices

Questions	Component		
	Planning	Operations	Communication
Environmental education program for employees	.613		
Assessment of environmental and health and safety risks/aspects	.733		
Senior manager for socio-environmental issues	0.47		
Employees working full-time on environmental management and social projects	.592		
Defined and published environmental policy	.750		
Clearly defined long-term socio-environmental objectives and planning	.566		
Environmental and occupational health and safety criteria to select suppliers	.799		
Environmental and occupational health and safety criteria to assess suppliers	.771		
Periodical environmental and occupational health and safety audits	.778		
Emergency response program	.766		
Pollution treatment and control systems	.749		
Written operational procedures to control environmental and health and safety risks	.792		
Product project focused on cutting, reuse and recycling		.704	
Product lifecycle analysis		.554	
Project of productive processes focused on reduced energy and natural resource consumption		.625	
Replacement of hazardous or polluting materials in products		.553	
Investments in CO ₂ emission reduction technologies		.638	
Energetic efficiency programs		.691	
Solid waste recycling and reduction programs		.606	
Water consumption recycling and reduction programs		.571	
Replacement of fossil fuels by renewable energies (photovoltaic, solar, wind)		.661	
Replacement of fossil fuels by alternative energy sources (natural gas, biomass, geothermal)		.572	
Use of ecological and social arguments in propaganda and communication with the public			.683
Clear information to the public about the environmental and safety and/or health risks of the product			.711
Seminars about sustainability for executives			.643
Periodical publication of sustainability reports			.738
Sponsoring of environmental events			.718
Insurance contract to cover potential environmental risks			.471
Remediation of environmental damage (liabilities)			.646
Protection/preservation of species and habitats			.731

With the factors at hand, the simple arithmetic means of each respondent's scores (identified in Table 3) were used to produce the dependent and independent variables. To control for the collinearity effects between the independent variables, the hierarchical model was chosen. The simple regression model 1S assesses the

influence of the market stakeholders on environmental proactivity, given that these interested parties exert greater influence on the organization and its results. Next, the non-market stakeholders' index is added, as shown in Table 4, and a multiple econometric model is tested (1M).

Table 4. Multiple regression to assess the influence of market and non-market stakeholders on environmental proactivity

Model 1	Unstandardized Coefficients		Standardized Coefficient	T	Sig	Collinearity Statistics	
	B	Standard Error	B			Tol	VIF
1S							
(Constant)	1.192	0.433		2.755	0.007		
Market Stk	0.545	0.123	0.388	4.417	0.000	1.000	1.000
(Constant)	0.561	0.429		1.309	0.193		
Market Stk	0.225	0.137	0.160	1.636	0.105	0.699	1.430
Non-market Stk	0.544	0.128	0.416	4.259	0.000	0.699	1.430

The 1S model that tests the influence of market stakeholders on environmental proactivity is statistically significant. In the 1M model, only non-market stakeholders exert a significant and positive influence on environmental proactivity. The level of correlation between the variables needs to be considered through. Also, it needs to be accepted that environmental proactivity actions can be forecasted relatively well

based on the environmental pressure.

Table 5 shows the test results of the stakeholders' influence on environmental proactivity in the models 1S and 1M. The collinearity between the independent variables corresponds to 0.52. This fact is understandable when considering that the two variables are different dimensions of a same attribute.

Table 5. Test of stakeholders' influence on environmental proactivity

Model	R	R ²	Adj. R ²	Standard Error	Change R ²	Change F	gl 1	gl 2	Durbin-Watson
1S	0.388 ^a	0.151	0.143	0.84207	0.151	19.511	1	110	1.926
1M	0.521 ^b	0.272	0.258	0.78326	0.121	18.136	1	109	

a. Estimators: (constant), Environmental Pressure of Market Stakeholders;

b. Estimators: (constant), Environmental Pressure of Market Stakeholders, Environmental Pressure of Non-Market Stakeholders

Source: Research data processed in SPSS for Windows – v. 17.0

The explanatory power of the test (R²) resulted in 27.2%. This result indicates that the stakeholders' environmental pressure partially explains the organizations' environmental proactivity practices. For the generalization (Adj. R²), the 5.8% index is also representative. The ANOVA test, which indicates the statistical significance of the regression model, showed significance at less than 1%. In addition, the index that certifies the normality of the sampling errors (Durbin-Watson), a necessary condition for the security of the test, corresponded to 1.926.

Next, more particular models will be analyzed. The independent variables will now be tested to check the

prediction level of specific environmental proactivity dimensions. The first dimension, considered as a dependent variable, refers to the planning practices. This dimension pictures the environmental proactivity actions related to the activities that are aimed at the company's organization and its planning strategies to support the inclusion of proactive environmental management practices.

Table 6 confirms the hypothesis that the environmental pressure positively influences planning activities for the market stakeholders (model 2S). In model 2M, the non-market stakeholders show significant influence, while the market stakeholders are not significant.

Table 6. Multiple regression for test of stakeholders' influence on planning activities

Model 1	Unstandardized Coefficients		Standardized Coefficient	T	Sig	Collinearity Statistics	
	B	Standard Error	B			Tol	VIF
2S							
(Constant)	13.866	5.656		2.452	0.016	1.000	1.000
Market Stk	6.492	1.614	0.388	4.023	0.000		
(Constant)	5.366	5.577		0.962	0.338		
Market Stk	2.172	1.786	0.120	1.216	0.227	0.699	1.430
Non-market Stk	7.332	1.662	0.435	4.412	0.000	0.699	1.430

Source: Research data processed in SPSS for Windows – v. 17.0

The model 2M also reveals collinearity between the independent variables, with a prediction level of 24.7%.

The prediction power corresponds to 26% and the generalization power to 24.7%, as observed in Table 7.

Table 7. Test of stakeholders' influence of environmental planning activities

Model	R	R ²	Adj. R ²	Standard Error	Change R ²	Change F	gl 1	gl 2	Durbin-atson
2S	0.358 ^a	0.128	0.120	11.00527	0.128	16.181	1	110	1.775
2M	0.510 ^b	0.260	0.247	10.18351	0.132	19.469	1	109	

a. Estimators: (constant), Environmental Pressure of Market Stakeholders;

b. Estimators: (constant), Environmental Pressure of Market Stakeholders, Environmental Pressure of Non-Market Stakeholders

Source: Research data processed in SPSS for Windows – v. 17.0

Then, environmental proactivity was tested for operational practices, that is, the changes registered in the companies' productive model and processes, as shown in Table 8. The result confirm the hypothesis

that environmental pressure exerts positive influence on operational control activities (model 3S) and, in model 3M, that the non-market stakeholders exert significant influence when compared to the market stakeholders.

Table 8. Multiple regression for test of stakeholders' influence on operational control activities

Model	Unstandardized Coefficients		Standardized Coefficient	T	Sig	Collinearity Statistics	
	B	Standard Error	B			Tol	VIF
3S							
(Constant)	12.146	4.241		2.864	0.005	1.000	1.000
Market Stk	4.433	1.210	0.330	3.662	0.000		
(Constant)	7.736	4.372		1.769	0.080		
Market Stk	2.191	1.400	0.163	1.565	0.121	0.699	1.430
Non-market Stk	3.804	1.303	0.304	2.920	0.004	0.699	1.430

Source: Research data processed in SPSS for Windows – v. 17.0

Table 9 displays interesting results. While the correlation between the independent variables corresponds to 41.6%, the prediction power for this

scenario drops to 17.3% and the generalization power to 15.8%.

Table 9. Test of stakeholders' influence on operational control activities

Model	R	R ²	Adj. R ²	Standard Error	Change R ²	Change F	gl 1	gl 2	Durbin-Watson
3S	0.330 ^a	0.109	0.101	8.25287	0.109	13.412	1	110	1.950
3M	0.416 ^b	0.173	0.158	7.984423	0.065	8.527	1	109	

a. Estimators: (constant), Environmental Pressure of Market Stakeholders;

b. Estimators: (constant), Environmental Pressure of Market Stakeholders, Environmental Pressure of Non-Market Stakeholders

Source: Research data processed in SPSS for Windows – v. 17.0

Finally, the test was applied to the environmental proactivity activities related to the organization's communication practices with its public of interest. These actions were distinguished through the exploratory analysis developed in this study. Among other actions, the periodical publication of sustainability reports and clear information to the public about potential environmental risks can be mentioned.

added to the multiple regression model, (4M), however, the non-market stakeholder variable gains significance, while the market stakeholders lose their significance.

The research confirms the hypothesis that the environmental pressure the stakeholders exert influences the organization's development of proactive environmental management in communication practices (Table 11). The regression behavior found in the previous models is repeated in this model, that is, in the simple regression model (4S), the market stakeholders exert significant influence on communication practices. When

The results found in models 1, 2, 3 and 4 indicate that the variables "pressure from market and non-market stakeholders" are positively correlated. This correlation can be attributed to the high endogenous level between the variables. Similarly, Al-Tuwaijri et al. (2004) found a high endogenous level among the variables economic performance, environmental performance and environmental disclosure. The authors detected that the proxy used to measure environmental performance could be endogenous. Correlations among the variables can indicate possible multicollinearity problems. The variance inflation factor (VIF) was calculated and reveals values below the cut-off point of 10, which eliminates the multicollinearity problem (Gujarati, 2006).

Table 10. Multiple regression for test of stakeholders' influence on communication activities

Model	Unstandardized Coefficients		Standardized Coefficient	T	Sig	Collinearity Statistics	
	B	Standard Error	B			Tol	VIF
4S							
(Constant)	6.122	0.433		1.723	0.088	1.000	1.000
Market Stk	4.062	0.123	0.357	4.005	0.000		
4M							
(Constant)	0.920	3.520		0.261	0.794		
Market Stk	1.417	1.127	0.124	1.257	0.211	0.699	1.430
Non-market Stk	4.487	1.049	0.424	4.278	0.000	0.699	1.430

Source: Research data processed in SPSS for Windows – v. 17.0

Table 11 shows a correlation index of 50.3% between the variables. The prediction power, in turn, corresponds to 25.3% and the generalization power to 23.9%. In

the case under analysis, the indices were also very satisfactory and bordering on the levels found for the aggregated environmental proactivity measure.

Table 11. Test of stakeholders' influence on communication activities

Model	R	R ²	Adj. R ²	Standard Error	Change R ²	Change F	gl 1	gl 2	Durbin-Watson
4S	0.357 ^a	0.127	0.119	6.91548	0.127	16.039	1	110	2.154
4M	0.503 ^b	0.253	0.239	6.42838	0.125	18.302	1	109	

a. Estimators: (constant), Environmental Pressure of Market Stakeholders;

b. Estimators: (constant), Environmental Pressure of Market Stakeholders, Environmental Pressure of Non-Market Stakeholders

Source: Research data processed in SPSS for Windows – v. 17.0

The results reached in models 1, 2, 3 and 4 confirm all hypotheses (H₁, H₂, H₃ and H₄), revealing the stakeholders' positive influence on the investigated companies' environmental proactivity. The hypotheses are valid for environmental proactivity (combined measure) as well as for the three planning, operations and communication practices (disaggregated measure). Similarly, the "market and non-market stakeholders" stakeholders showed similar behavior in all models tested.

5. DISCUSSION

The research identified a complex picture of interdependent relationships between the market stakeholders (International suppliers; Domestic suppliers; Employees; Subcontractors; External competitors; Internal Competitors; External market clients; Internal market clients and Unions) and non-market stakeholders (Investors; Funding agents; Environmental surveillance agency; International entities; NGOs; Industrial associations; Media; Local community; Indigenous communities; Relatives and Friends).

These research results permit inferences about the stakeholders' activities and their relations with companies in favor of environmental proactivity. The survey involving Brazilian companies of different sizes and from different industrial sectors permit accepting the hypothesis that stakeholders exert pressure on the companies and positively influence their environmental proactivity. Other empirical studies support the results

found in this research, in which the stakeholders encourage different environmental conducts.

To give an example, the results by Henriques and Sadorksy (1999) support the idea that environmental proactivity is associated with greater pressure from organizational stakeholders (clients, suppliers, employees, unions, shareholders and funding institutions) and community stakeholders (communities and social groups, NGOs and competitors). Environmental reactivity, on the other hand, is associated with greater pressure from regulatory stakeholders (government and supervisors). Studies by Klassen and Whybark (1999) confirm that the external stakeholders influence proactivity in two constructs: interaction with the external public and concern with environmental regulation. Both constructs show a positive impact on the implementation of pollution prevention and control practices.

In this sense, the research reveals that the non-market stakeholders exert a significant and positive influence when compared to the market stakeholders. On the other hand, the market stakeholders alone influence environmental proactivity but, in combination with the non-market stakeholders, seem to lose pressure strength and get more focused on the particular aspects of their supply chain.

Frooman (1999) uses the theory of resource dependence to propose two dimensions that classify stakeholders' influence in organizational strategies. On the one hand, the stakeholders that provide the company with resources (market stakeholders) can threaten to remove these resources or impose conditions to continue supplying resources. On the other hand, non-market stakeholders can both manipulate the resource

flow and influence the partners to supply resources to the firm. Kassinis and Vafeas (2002) assume that a proxy can be used to explain this external pressure from the stakeholders, consisting of environmental legislation and surveillance and the communities' environmental demands.

In the Government's case, the results seem to support the work by Aguilera et al. (2006). The authors affirm that the relation drawn between government and environmental proactivity in influenced by the context of the country and its governance.

Despite existing difficulties, the Brazilian government has shown greater efforts to reinforce environmental surveillance actions, by encouraging the creation of municipal environmental entities, so as to decentralize and better distribute responsibilities and improve its relation with companies. This is mainly true in large companies of great environmental impact, like the chemical companies that were predominant in this research. The government is considered responsible for establishing a baseline standard of compliance, constructed based on social pressures.

Thus, legal requirements add up to the requirements of financial institutions, increasingly engaged in environmental issues, resulting in different pressure foci and increased charges on the companies. Investors expect more efficient results when incorporating sustainable development criteria into their business, as a strategic differential.

Financial institutions start to figure as important sources of changes in environmental proactivity promotion, as confirmed by Bevins (2011). The banks provide for this development through the mobilization of economic, social and political agents, and through their work with distribution channels, design, packing and funding for machinery.

In the figure of organized civil society, NGOs play a relevant role in the expression of the population's desires and charges. Christmann and Taylor (2002) affirm the mobilization of NGOs, no longer with a sole focus on solving shortages deriving from governments' political and legal structures, but also with a focus on companies' socio-environmental behavior.

As regards the media, its coverage with regard to sustainability themes has become increasingly specialized. On the other hand, Vivarta and Canela (2006) analyze the role of the press (informal pressure) in the Brazilian reality as an entity that discusses corporate social responsibility themes. The authors reached the conclusion that coverage on the theme is still superficial, unilateral and lacks criticism and, in terms of contents, does not distinguish between the environmental theme and social actions.

These social actors' position of charging contributes for companies to seek increasing connection with their stakeholders, thus driving responsible organizational performance. This reveals the increasing emergence of integrative and innovative solutions, which gradually move the companies' focus from selling products to building relationships and confidence (Raine, 2006).

According to Husted and Allen (2011), when the company deals with the non-market stakeholders, the managers' risk perception is enhanced by the difficult work of aligning stakeholders' demands with company objectives. When this obstacle is overcome, however, the support received from the non-market stakeholders can gain a powerful sense of commitment and common

proposals.

6. CONCLUSION

These research results contribute to further evidence on the stakeholders' activities as drivers of proactive environmental management. To construct this general panorama, the study of the Brazilian companies assessed the influence of market and non-market stakeholders on the adoption of environmental proactivity and particularly on planning, operation and communication practices.

In view of the main study objective, the relevance of stakeholders' positive action for environmental proactivity was verified. It seems that, the more articulated the stakeholders' actions, the more efficient the strength of the pressure they exert on the companies will be. The research revealed that the non-market stakeholders, which do not participate directly in the companies' supply chain, seem to demonstrate a more mature relationship environment. The research results permit inferring that, as the stakeholders gain familiarity with the companies' environmental impacts and move towards a position of absorbing and reflecting information, they manage to achieve a level of awareness and effective action.

Thus, it was identified that stakeholders and companies gradually advance towards the incorporation and integration of their responsibility actions with a view to achieving sustainable development. In Brazil, the articulation of these actions remains restricted, which compromises their efficiency in simultaneously considering the social, economic and environmental dimensions.

Nevertheless, environmental management ideas and practices are increasingly present on the social actors' agendas, which start to acknowledge their interconnections. The transformation process perceived in Brazil, although late in comparison with developed countries, shows rapid progress, simultaneously overcoming many phases along its trajectory. Proactive environmental management is a constant learning route and these practices are increasingly required for companies and stakeholders, reflecting in a maturing process of the Brazilian society.

Some research limitations should be acknowledged. Initially, the sample needs to be expanded to represent the Brazilian industry in general. The companies who answered the research instrument can represent a group that is more favorable to environmental issues. The research particularly tends to reflect the reality of chemical and processing industries. Nevertheless, the sampling universe indicates stakeholders' significant and positive actions as proactive environmental management drivers. Another limitation involves the time (nine months) the research link was available on the IfM website. It is observed, however, that the changes need to implement an Environmental Management System take about 18 months. Therefore, the researchers believe that the companies analyzed maintained the same environmental proactivity or reactivity profile.

Despite these limitations, the research reveals that the environmental proactivity concept as a "voluntary action" needs to be reconsidered. In other words, if the company receives pressure to do something and does it because of this pressure, how can one see this as voluntary action? It seems more plausible to call this response

to environmental pressure “strategic positioning”. Environmental proactivity should be considered as a strategic element of “survival: and market “balance”, adaptation to the social context and response to legislation and environmental surveillance. Therefore, this study indicates that one way in which the different groups of stakeholders influence the practices and relationships with the companies is aimed at promoting environmental proactivity.

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