

MOTIVATING FACTORS IN HOSPITAL ENVIRONMENTAL MANAGEMENT PROGRAMS

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ABSTRACT

Environmental responsibility has been a widespread research theme. Its emergence in the health care sector, however, is relatively recent. Because the need for healthcare services tends to increase due to greater life expectancy and environmental externalities produced by human activity are having negative effect on human health, a deeper understanding of this relationship is appropriate. To contribute to this effort, this article aims to investigate the main motivations driving hospital managers to adopt environmental responsibility programs and the actions implemented by them. A multiple case study was conducted involving four hospitals in Rio de Janeiro and São Paulo, selected from different ownership types. Public and private hospitals were selected for interviews and secondary data analysis. The research found that the main motivational factors (competitive, ethical and regulatory) drive the sustainability efforts of these hospitals and that the competitive and regulatory motivators have the potential to establish a baseline for environmental performance that varies across ownership type (public or private). Further, the research also indicated that the comprehensiveness of environmental actions correlates with the motivators that drive hospitals to adopt those actions. Two conceptual models are proposed to illustrate these findings and offer bases for further research.

Key words: Health care, Sustainability, Environment, Brazil, Motivations, Actions

INTRODUCTION

Environmental sustainability has shown to be of growing interest among academia, governments, organizations and society as a whole. It has become widely accepted that direct and indirect human interference are having profound impacts on the balance of ecosystems around the world, thus triggering full-scale global climate change. These changes in turn have shown profound effect on economies, politics and even on the human being as an individual.

According to environmental reports, these changes pose a real threat to developing countries when it comes to providing basic human amenities to their population, such as food provisions and safety from natural hazards (Rio+20, 2012). Climate is becoming increasingly extreme, leading to accelerated desertification in some places while other areas suffer from excess precipitation or drought. It has been suggested that these changes are caused by direct or indirect human activity. Sustainable development aims at tackling the challenge of how to provide social and economic advancement without negative outcome to the environment.

The most common definition of sustainable development was coined at the World Commission on Environment and Development convention in 1987: "Sustainable development is the kind of

development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland, 1987). Although the resources required to fulfil current and future needs could, in theory, be substituted for others, Ekins (2011) argues that the interaction between the countless ecological systems is not well understood. Therefore, it is not possible to determine if a given resource, exhausted by one generation, could be substituted in the future by another one since this availability is undermined by several uncertainties. Following this line of thought, the author argues that economic development should be concerned with the preservation of current ecological functions.

On a more individual level, a parallel can be drawn between sustainability and medicine as a practice. The field of medicine focuses on the health of the body and the mind. For over a century of social and economic improvements, medical treatment and improved pharmaceuticals have increased human life expectancy by several decades. In fact, a common mission statement of hospitals and health care organizations is to preserve life and treat diseases. Thus, there seems to be a logical and ethical duty in medicine to avoid externalities that might work against its ultimate goal.

Unlike a hospital's mission to sustain life, the equipment and installations used to do so commonly end up having a negative effect on human health if environmental externalities are taken into account (Ulhøi & Ulhøi, 2009). Although a strong cause-effect relationship is not possible to be determined, the authors argue that the medical sector has the ethical obligation to follow a “do no harm” philosophy.

Even though there is an alignment between the field of medicine and environmental sustainability, adherence to environmental sustainability practices are incipient, and academic research is even scarcer. Therefore, this research aims to strengthen the theoretical foundation to bring these two fields closer together.

Objectives

The objective of this paper is to advance the academic research regarding environmental management in the health care sector. Specifically, it has the objective of investigating what motivates hospital managers to seek and adopt environmental responsibility programs. Additionally, it seeks to identify what are the critical actions that these managers take regarding environmental sustainability programs.

Thus the general research questions are:

- Why do hospital managers adopt environmental responsibility programs?
- What are the critical actions these managers take regarding environmental sustainability?

Conceptual Framework

Academic papers regarding environmental classification models, environmental strategy and motivators for the adoption of environmental actions served as the starting point for the research. Five environmental classification models, proposed by Hunt and Auster (1990), Hass (1996), Vastag, Kerekes and Rondinelli (1996), Winn and Angell (2000) and Abreu (2009), and one paper dealing with motivations to adopt environmental programs (Paulraj, 2009) were selected to form a research framework used during the case study interviews. It was decided to use environmental strategy classification models to form a research framework to provide solid background for the semi

structured interview guide and the analysis phase. The five models and their criteria are listed in Table 1.

Table 1: Environmental Classification Models selected to form the Research Framework

Author	Model	Type	Study	Criteria	Detail of criteria
Hunt and Auster (1990)	Prescriptive	Five Stages continuum	-	Degree of environmental risk reduction	To what degree does the program reduce environmental risk in the organization
				Commitment of Organization	How does management of the organization deal with the issue of environmental sustainability and what resources are allocated to it
				Program Design	Environmental performance goals, integration across the company, top level management reports
Hass (1996)	Descriptive	2x2 matrix	Norway, food processing and printing companies	Structure of Environmental Management System	Formal and structured environmental management program
				Implementation	Actual and successful implementation of the formal environmental policies
Vastag, Kerekes and Rondinelli (1996)	Predictive / Descriptive	2x2 matrix	Hungary, several sectors	Endogenous risk	Risks that are a direct result of operation and internal processes of the organization
				Exogenous risk	Risks that are determined by external issues like location, demographics, infrastructure, education and populations attitudes towards environmental issues
Winn and Angell (2000)	Descriptive	2x2 matrix	Germany, 1st study in several sectors, 2nd study in food processing sector	Active or passive implementation	How does the organization deal with environmental issues
				Commitment of organizational policies	Formal commitment and organizational policies towards environmental sustainability
Abreu 2009	Descriptive	2x2 matrix	Brazil, O&G, textile and beverages industries	Environmental pressure	Internal and external stakeholder pressure an organization experiences in a determined sector
				Environmental conduct	Roles and processes an organization has to deal with vis-à-vis environmental issues

Figure 1 exemplifies how the different models connect with one another. Two main axes are drawn from Abreu's (2009) model: Environmental pressures, which can be both internal and external, and environmental conduct which represents organization's internal processes and procedures. Vastag, Kerekes and Rondinelli's (1996) exogenous risk and Hunt and Auster's (1990) degree of risk reduction criteria have commonalities with Abreu's Environmental pressure dimension. Additionally Vastag, Kerekes and Rondinelli's (1996) endogenous risk provide a bridge between Abreu's dimensions.

In addition to Vastag, Kerekes and Rondinelli's (1996) endogenous risk and Abreu's (2009) environmental conduct, it is possible to align three other main dimensions in the internal axis of this visual model: the structure of the environmental system (Hunt & Auster, 1990; Hass, 1996), the declared commitment of the organization (Hunt & Auster, 1990; Winn & Angell, 2000) and the practical implementation of the environmental programs (Hass, 1996; Winn & Angell, 2000).

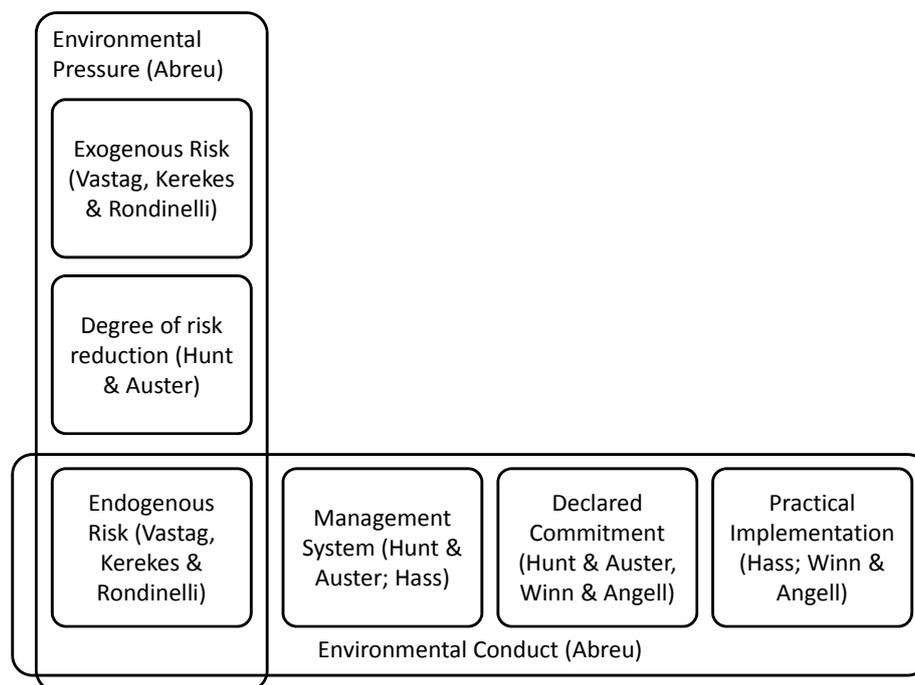


Figure 1: Visual map of models and criteria, Source: Authors

All these models provide insight to actions and drivers that lead management to adopt environmental management programs in their organizations. The environmental sustainability literature points out that the main motivators driving organizations to develop their actions in this area include the necessity to comply with regulations, achieve competitive advantage, fulfill stakeholder demands, act ethically, and react to critical facts, amongst others (Dimaggio & Powell, 1983; Bansal & Roth, 2000; Jiang & Bansal, 2003). Paulraj (2009) asserts that there are three main dimensions regarding the adoption of environmental sustainability programs: Regulation, Competition and Ethics. These three dimensions provided additional structure to the statements and questions posed by the previously mentioned environmental classification models.

A total of 65 statements were extracted from this literature; similar statements were condensed into a single item. The resulting framework has two statements for each of the three main motivational dimensions (Competitive, Ethical and Regulation) and three, six and five statements, respectively, regarding concrete actions of the organizations. Table 2 shows the number of statements drawn for

each category of the framework. It should be noted that the number of questions and statements in each category does not represent the relative importance, but rather the number of questions that were identified from the articles. Those vary in scope and depth both within and across each author's model.

Table 2: Key statements and questions identified in literature review

Author	Regulatory		Competitive		Ethical		Total (no repetition)
	Motivator	Action	Motivator	Action	Motivator	Action	
Hunt and Auster (1990)	-	2	-	-	-	5	6
Hass (1996)	-	1	-	-	-	1	2
Vastag, Kerekes and Rondinelli (1996)	1	4	2	8	3	7	22
Winn and Angell (2000)	2	-	-	1	1	8	12
Abreu (2009)	1	8	1	4	-	7	17
Paulraj (2009)	2	-	2	-	2	-	6
Total:	6	15	5	13	6	28	

METHODOLOGY

Despite the fact that there are several initiatives in the field of environmental management in hospital operations, the amount of academic research addressing the issue is limited, thus justifying research seeking to answer questions of "how" and "why" these managerial movements occur. Eisenhardt (1989) contributes to this view, arguing that in the early stages of a research topic a case study approach is most appropriate. Because the organizations being investigated are real life businesses dealing with human life, an experiment was eliminated as a research option. In light of these answers to Yin's (2014) guiding questions, the present research constitutes an exploratory case study.

Unlike quantitative research, which focuses on statistical sampling to achieve a representative group of subjects in the study, the case study methodology follows a theoretical sampling, aiming to enrich the study as a whole (Eisenhardt, 1989; Yin, 2014). Yin (2014) continues to argue that in a multiple case study, the selection should be made in order to achieve a literal replication, in which each additional case leads to similar outcomes, or a theoretical replication, in which case the researcher expects different outcomes due to predictable reasons. The latter method was chosen and selection of the cases is detailed below.

Because hospital operations vary a lot according to the type, intensity and quality of medical treatment, it was determined that only hospitals which provided high quality services would be taken into consideration for this research. To fulfil this purpose, the Joint Commission International (henceforth JCI) hospital accreditation was selected as a qualifying factor. Interviews conducted before the current case studies with two managers working for one of the biggest health maintenance organizations (HMO) in the country showed that such a criterion would level the cases in terms of quality of medical services provided by the organizations. As far as type is concerned, it

was chosen as non-critical in light of the proposed research questions since the focus is on motivational factors, and not on measurable environmental impact, which can vary in types and intensity of treatment.

It was further determined that the hospitals should be located in Rio de Janeiro or São Paulo due to travel and access limitations. Sixteen hospitals met the above criteria. Hospital management was contacted through telephone and email. Two private hospitals and two public hospitals met the criteria and responded positively to the research proposal. Table 3 is a summary of the participating hospitals.

Table 3: Characteristics of selected hospitals for the case study

Hospital	Ownership	Location	Type	M ²	Beds	Employees	JCI Accr. Yr.
A	Private Non-Profit	São Paulo	General	135000	650	6080	1999
B	Private For-Profit HMO	São Paulo	Cardiology	8100	93	440	2010
C	Public Federal	Rio de Janeiro	Orthopedics	70000	321	4700	2006
D	Public Federal	Rio de Janeiro	Oncology	6200	87	490	2008

Semi-structured interviews were carried out with 2-5 management employees from each case, with a total of up to 13 interviews. As secondary data the researchers' observation during the interview visits were considerate as well as documentation provided by the organizations or published on their websites, such as press releases, annual reports and general information about the organization. The use of multiple data sources provides additional credibility and reduces bias (Eisenhardt, 1989; Yin, 2014).

Data collection was carried out in two ways. Secondary data, in the form of annual reports, environmental reports and institution information were collected between July 2013 and May 2014. This information provides a general overview of the hospitals only and is not intended to provide an in-depth analysis of environmental performance or actions since this research focuses on what motivates managers to seek those programs.

Prior to field research, two interviews were conducted with managers of a leading HMO provider to gain knowledge on the characteristics of the sectors, validate some assumptions and check if the interview guide was appropriate. Minor changes were carried out in the interview protocol after these initial conversations.

Semi-structured interviews were conducted in July 2013 and between March 2014 and May 2014. Interviewees were encouraged at the start of the interviews to talk freely about their background, professional history and personal take on the meaning of environmental responsibility and sustainability. The interview guide served only as a reference during the process to make sure all desired themes were explored during the encounter. These interviews were conducted and recorded for future transcription and analysis. All interviews were held with managers or coordinators at the time of the appointment.

The recorded interviews were transcribed by the author to identify possible passages that met the research framework. Each section that presented relevant information to the research theme or which could be clearly linked to a proposition presented in the framework was marked and copied to a table. This table identifies the author of the remark, which organization he or she belongs to, which pages of the transcription the remark is on and which proposition of the framework it is linked

to. This structured approach is intended to avoid the common pitfall of qualitative research of being overly exposed to subjective interpretation of the authors.

This analysis enabled the author to filter the necessary evidence out of the interviews, thereby providing the base for subsequent analysis. It also enabled the author to present the findings in a concise and summarized way for the reader of this study in the form of tables. A total of 335 sections were extracted from the transcriptions into the analysis tables. Since some of them could be linked to more than one concept of the research framework, the analysis tables comprised a total of 385 entries. Following this step, the entries were sorted by driver or action dimensions of the framework and by author.

RESULTS

The cases analyzed manifested great disparities amongst each other, which, nevertheless, offer insight into the existence and development of environmental management programs and actions in hospital management. In the following paragraphs, a brief discussion will be undertaken moving back from the framework to the underlying literature from which it has emerged. First, the drivers will be addressed and afterwards, the managers' related actions. Table 4 shows in which cases supporting evidence was found for each statement of the research framework. While in some cases, there were isolated mentions that do support one of the propositions, the summary table only accounts for the cases where the issue was addressed by more than one interviewee and statements were consistent across the interview itself and corroborated by other interviewees.

Evidence supporting the three driver categories presented by Paulraj (2009) were found during the research; however how the existence of those underlying drivers lead to actions regarding environmental management and action seems to vary.

The competitive driver was present in the form of concerns regarding cost-saving measures, as derived in the research framework of Paulraj (2009) and Vastag, Kerkeres and Rondinelli (1996). This was true for all institutions regardless of their ownership structure. While this research effort had no quantitative approach to measure relative importance within and across cases, a clear impression gained from the interviews is that given the economic sustainability issue of private institutions, which depend on revenue to sustain their operations, the cost-saving driver was more pressing in those cases. The second competitive driver, based on contributions from Paulraj (2009) and Abreu (2009), which addresses the acquisition of new clients based on differentiation from competition using environmental initiatives, found no reliable evidence in the research process.

The first ethical driver was based upon Paulraj (2009), Vastag, Kerkeres and Rondinelli (1996), and Winn & Angell (2000) regarding the moral duty of organizations to the sustainability challenge. Strong evidence for this driver was found only in a private non-profit hospital, which has a strong connection to an ethnic group. The evidence suggests that organizations assume the values and conduct of their stakeholder groups, in particular those that have most influence over governance. The fact that this hospital has a strong stakeholder group, which holds common values within itself, suggests the possibility of transferring those values to the organization. For the other institutions, there was no evidence of a similar compact and homogeneous stakeholder group that could infuse the organization with such values. An overarching stakeholder group can be society as a whole in this case, but in the opinion of all of the interviewees, general concern for environmental matters is still very low in Brazil. The second ethical driver was based on Paulraj (2009) and Vastag, Kerkeres

and Rondinelli (1996), regarding top management support for the environmental initiatives. In this case, the interviews suggest that there is an autonomy and bureaucracy problem affecting the public institutions. In all cases, some managers surveyed expressed genuine concern and beliefs in favor of environmental management as an important task with which the hospital should be concerned. However, the interviews conducted in the public hospitals point to the fact that those personal beliefs are hindered by the governance structure and culture of these organizations. That is, personal beliefs face great difficulty of becoming institutionalized as an organizational culture in the public institutions.

Regulation as a driver for the adoption of environmental practices has been proposed in a future-oriented and present-oriented fashion. The notion of adopting environmental practices as a pre-emptive action against future regulation has been proposed by Winn & Angell (2000). Only in the interviews from Hospital A was a consistent future-oriented approach to regulation shown to exist. The annual sustainability report also has a future oriented emphasis. Hospitals B corporate level also has some future-oriented actions; however, in this case, the interviews on operational level did not show strong evidence that future regulations are a driver for any action taken by those managers.

The second regulatory driver was derived from Paulraj (2009), Vastag, Kerkeres and Rondinelli (1996) and Abreu (2009) and addressed current regulation as a driver. The interviews from both private hospitals showed regulation to be the main driver for the actions that they consider to be linked to environmental responsibility. The same governance characteristics of lack of autonomy and overwhelming bureaucracy – which seems to hinder ethical drivers to be translated into actions in this case – seem to have an ambiguous role of driving and not driving the adoption of environmental practices. That is, if a regulation clearly mandates the adoption of an environmental practice, it becomes a strong driver. On the other hand, if regulation does not mandate specific actions or has ambiguous interpretation (thereby presenting uncertainty) it become very unlikely that any action will take place.

Besides the motivational drivers, the literature review also provided a series of propositions and questions, which were summarized into action statements against which the interviews and secondary data were compared. This, as well as statements about the environmental actions that the hospitals performed, were the basis to answer the second research question of this research.

From the research framework, we have several statements linked to the competitive, ethical and regulation drivers. While the response to those represents the consistent existence of such actions in the hospitals, given the views of the interviewees and the secondary data analysis, the absence of the action does not necessarily equate lack of concern. A rather interesting point, which became clear during the research effort, is the existence of disequilibrium between what is happening and the intent of some managers at those institutions. Those points will be addressed in the following paragraphs.

Table 4: Summary of findings according to research framework

Framework Proposition: competitive related	Code	Hospital			
		A	B	C	D
Environmental responsibility programs have positive effect on the economic and competitive performance, ensuring short and long term benefits.	DC1	x	x	x	x
Environmental programs are key factor to acquire new customers.	DC2				
Environmental responsibility programs seek to improve the image of the organization to internal and external stakeholders?	AC1	x	x		
Solid waste management aims at improving the competitive position of the organization through lower expenses.	AC2	x	x	x	
The organization seeks to improve its processes in order to achieve greater environmental and economic efficiency.	AC3	x	x	x	x
Framework Proposition: ethical related	Code	A	B	C	D
Environmental sustainability is a challenge for all and we have to do our part because it's the right thing to be done.	DE1	x			
Personal beliefs of top management is a key factor in the adoption of environmental responsibility.	DE2	x	x		
The highest level of management of the organization is actively involved in environmental responsibility programs.	AE1	x	x		
Corporate strategy encompasses environmental responsibility issues consistently.	AE2	x	x		
Allocation of resources, financial and otherwise, are consistent and cover the needs of environmental management.	AE3	x	x		
There is concern about the environmental efficiency of suppliers and service providers who serve the organization.	AE4	x	x	x	
The organization monitors and audits the disposal process of their wastes as well as other environmental impacts?	AE5	x	x		
There is comprehensive training that reaches all employees of the organization?	AE6	x	x		
Framework Proposition: regulatory related	Code	A	B	C	D
We are interested in being prepared for future environmental regulation to avoid problems when they come into practice.	DR1	x			
The environmental program aims at fulfilling environmental regulation and avoid sanctions.	DR2			x	x
Incident prevention aims to avoid fines and penalties.	AR1				
Waste disposal aims to meet the minimum needs established by the legislator or regulator.	AR2		x	x	x
Environmental management system to satisfy the requests of regulators.	AR3				
The reports developed by the organization are aimed at satisfying regulatory agency or lawmaker.	AR4				
Training offered to employees aims to meet the standards and laws of regulatory agency or lawmaker.	AR5				

The first two actions related to the competitive motivators were based on statements in Vastag, Kerkeres and Rondinelli (1996) and Abreu (2009). The first one, concerning improving positive perception of stakeholders was found consistently in both private hospitals. The main targets of these efforts according to the interviewees were the staff themselves, followed by patients. A subtle characteristic, which has to be kept in mind, is that patients in most cases do not perceive themselves as the party paying for the services that they consume in these hospitals, since the vast

majority consumes services through a private health insurance plan. That said, the interviews suggest that the effort of enhancing positive image is more of a marketing attempt, without a clear and direct payback for the hospitals. In hospital C, while this point was not consistently observed, the interviewees cited the fact that although the hospital seeks to be a reference and dissemination point for its staff and patients, such initiatives are still incipient.

The second action related to competitive motivator addresses economic benefits, which can stem from improved solid waste management. This was corroborated in most cases; indeed, only the hospital that had the least-developed environmental practices did not show strong beliefs on the part of managers that more-advanced solid waste management practices can save money. It should be noted, however, that in all cases the issue was addressed more from the medical safety and financial standpoint than from the environmental standpoint. That is, the interviews suggest that in this case environmental benefits are a welcome side effect and not a primary objective.

The last action relates to operational improvements, which seek environmental and economic benefits. This statement was based on Vastag, Kerkeres and Rondinelli (1996), Winn and Angell (2000) and Abreu (2009). The action was encountered in all hospitals. In all cases, the economic factor was shown to be paramount with environmental benefits, once again, being deemed a welcome side effect. Improvements with no clear economic benefit were only referenced in the interviews from hospital A.

Actions related to the ethical drivers showed the greatest disparity between private and public hospitals. However, in these cases, the interviews also reflected the disequilibrium between the managers' concerns and the actions undertaken by the organizations. Such disequilibrium was particularly manifest in Hospital C.

The first and second actions related to ethical drivers can be taken together in this analysis, i.e., top-level management's involvement with the environmental issues (Hunt & Auster, 1990; Hass, 1996; Vastag, Kerekes & Rondinelli, 1996; Winn & Angell, 2000), and whether formal corporate strategy encompasses environmental issues (Hass, 1996; Vastag, Kerekes & Rondinelli, 1996; Winn & Angell, 2000). This was only found to be the case in the private hospitals. Governance and power structure of the public institutions, as well as other pressing issues, for instance, a workforce related crisis in Hospital D, have been cited as impediments in these cases. The interviews in these cases also suggest that Brazilian society as a whole does not press for environmental accountability in the public health care sector given the fact that the public health care system still fails to provide medical services to meet demand and general environmental responsibility awareness is considered low. This low relative importance also accounts for the lack of formal commitment of those institutions to the matter. In the case of Hospital C, however, some incipient actions suggest the scenario might be changing. Interviewees mentioned that grass-root initiatives from the waste management team led higher management to determine the establishment of a working team to institutionalize more sustainable logistics processes for the hospital.

The allocation of financial and other resources to the environmental issue has been the third action point of the research framework (Hunt & Auster, 1990; Abreu, 2009). Once again, in both private hospitals the interviewees said they were satisfied with the amounts of resources. In the case of Hospital A, which has the most investments, the notion was that it would not be appropriate to invest more before having a more consolidated environmental culture amongst staff. Hospitals under public management on the other hand have shown a consistent lack of allocation of resources

to the environmental management issue. Governance and power structure, as well as the high demand for treatment, have been suggested as the reasons for the lack of resources committed to the issue.

The fourth action statement dealt with environmental concerns of the hospital towards their suppliers and service providers (Vastag, Kerekes & Rondinelli, 1996; Winn & Angell, 2000; Abreu, 2009, 2011). Again, we have seen a consistent approach from the private hospitals, partially driven by the fact that both have ISO14.001 certification and it does suggest austere contracting and procurement policies. Hospital C also demonstrated initiatives concerning procurement, in sum, a combination of regulation mandating environmental attributes in procurement processes and the personal efforts of the waste management team, which had become the focal point for issues concerning environmental responsibility even without formal remit or the required resources.

The monitoring of environmental impacts is the second to last action point suggested by the framework (Hunt & Auster, 1990; Vastag, Kerekes & Rondinelli, 1996; Abreu, 2009). Once again, the private hospitals excelled in relation to the public ones. One fact that became apparent during the research process is that both private hospitals have information systems that are more advanced, thereby enabling the ability to store and retrieve environmental information. The public institutions, on the other hand, seemed to resort to less advanced information technology, which meant that data collection and information workflow was less sophisticated. Hospital C, again, showed incipient actions to increase data availability in order to enhance its environmental performance. The interviews suggested that in this case it was the personal commitment on the part of the waste management team that enabled such advances.

The last point is related to comprehensive training by environmental management for all employees (Vastag, Kerekes & Rondinelli, 1996; Abreu, 2009, 2011). As with all previous points, the private hospitals showed a more structured and resource available approach to this matter. In this case, however, in both public hospitals interviewees showed great concern, which they manifested with past actions or planned actions. In all cases, managers stated that the approach of the general population to environmental responsibility is deficient, and as such, employees need to receive comprehensive training and education to assimilate and internalize environmental management concepts. It was also pointed out several times that environmental management is not part of the curriculum of most of a hospital's workforce. That is, medical and nursing staff are not exposed to the basics of environmental responsibility during their academic training, even though they might be dealing with highly impacting materials. Although comprehensive training for all employees could not be said to be present in the public institutions, the interviewees asserted that (i) there are incipient movements to establish a more comprehensive environmental training (Hospital C) or (ii) employees responsible for training have been on a personal crusade to raise awareness surrounding the issue (Hospital D). In both cases, it can be stated that, despite the genuine concern, resources are lacking to address the task of comprehensive environmental training for all employees.

Finally, of the five actions relating environmental sustainability to regulation, only one was consistently manifest in the interviews. Environmental incident prevention to comply with regulation (Vastag, Kerekes & Rondinelli, 1996), environmental management system (Hunt & Auster, 1990; Vastag, Kerekes & Rondinelli, 1996; Abreu, 2009), environmental reporting (Hunt & Auster, 1990; Hass, 1996; Abreu, 2009) and minimum environmental training to comply with regulation (Vastag, Kerekes & Rondinelli, 1996; Abreu, 2009) did not find support in the interviews of this research.

The only action connecting environmental practices to regulation was specific to waste disposal (Vastag, Kerekes & Rondinelli, 1996), in this case including sewage. The management of solid waste, according to regulation, was presented as an environmental initiative at hospitals B, C and D; indeed, it was cited as the most important environmental activity in both public hospitals.

Finally, Table 5 shows findings from the interviews that, although initially not part of the research framework, appeared consistently across interviews. The need for further research linking the fields of health care and environmental sustainability becomes clear in the first of those points. The second one shows a possible future research direction regarding self-regulatory actions to go beyond regulatory requirements.

Table 5: Additional propositions after interviews

Additional Proposition	Type	Hospital			
		A	B	C	D
Connection between environmental externalities and human health care condition.	Ethical	x	x	x	
Use of self-regulative environmental mechanisms in the form of external certification and audits.	Self Regulatory	x	x		

CONCLUSION

The objective of this endeavor was to investigate (i) what motivated hospital managers to adopt environmental management programs and (ii) what actions were being taken by these managers to address the environmental issues.

The literature review was based on environmental strategy models, stakeholder theory related to environmental sustainability and the scarce academic literature about environmental responsibility in the health care sector. These articles served as a basis for a research framework and a semi-structured guide for interviews that took place in hospitals based in Rio de Janeiro and São Paulo, Brazil. A multiple case study methodology was chosen given the early stages of academic research of environmental responsibility in the health care sector and the type of questions that were proposed. Four cases were analyzed to provide theoretical generalization and provide the basis for future research. At the outset of the research, it was hypothesized that there could be significant differences between public and private hospitals. This assumption was supported by the case studies.

The three main motivating dimensions proposed by Paulraj (2009) have shown to be present in the adoption of environmental responsibility practices in hospitals. The interviews and analysis carried out for this research point to the fact that the ownership type and governance structure of those organizations determine which motivating dimensions will have greater influence over managers' decision making processes. We will first address the motivational factors and then the critical actions of hospital managers.

While at all hospitals, practices have been present that have positive effect on both environmental and financial performance, evidence from the interviews showed that in most cases the environmental benefit is a welcome "side effect" of financial sound practices. The environmental practices are not a competitive differentiation factor for hospitals. While the denomination used throughout this paper has been Paulraj's (2009) "competitive motivator" the findings suggest that a

more appropriate definition is that while there is a financial motivator driving the adoption of environmental practices, there is not a competitive motivator to do so. That is, although saving financial resources can, indeed, be a motivator for hospital managers to adopt environmental practices, acquiring new customers or being able to charge a premium given environmental initiatives is not a motivator.

Ethical motivators, on the other hand, have been found to drive the adoption of environmental practices in private institutions, though public institutions lag in these criteria. This is because private institutions have the necessary autonomy and resources required to implement environmental practices, in accordance with the stakeholders who wield the most influence on governance. A more compact and homogeneous stakeholder group in the private institutions also benefits the adoption of values from these groups by the organizations. In the public institutions, while the interviews reflected genuine concern on the part of at least some the management body of those organizations, the potential that those personal beliefs have to drive adoption of companywide practices and culture is hindered by an over-bureaucratic governance structure and a lack of resources and autonomy.

Regulation as a motivator for the adoption of environmental practices has, on the other hand, shown to be of great importance for public-sector hospitals. Given the governance and power structure of those institutions, the top-down mandates in the form of regulations and norms have shown to be the primary motivator for consistent adoption of environmental practices. At the same time, regulation (also somewhat primitive vis-à-vis environmental responsibility practices) results in low prioritization and effectiveness of such measures.

While the private cases surveyed in this paper appeared to be less motivated by regulation than by other factors (Financial and Ethical), it must be noted that both hospitals are considered to be high quality institutions, which is not the case for many private hospitals in Brazil. It is likely that private hospitals that do not have access to the resources available to those in the cases investigated will be more affected by regulation and financial motivators than by ethical motivators, as was witnessed in the case of the chosen institutions.

Keeping those conclusions in mind, an initial visual representation that hopefully will lead to further research efforts and that can serve as a heuristic model for both practitioners and academics is proposed in Figure 2. An underlying initial problem is the fact that there are no consistent and widespread environmental performance data on hospitals, or identifiable standardized measures to define environmental performance for hospitals. The proposed model does, however, encompass the findings from the interviews. The width of the motivating boxes could vary over time or region; that is, the regulatory motivator could extend (or contract) given regulatory changes, which in turn will affect the environmental performance baseline an organization has to comply with in order to continue to exist (assuming oversight is efficient, an issue beyond the scope of this paper). Thus, the regulatory motivator is heavily dependent on the state. The competitive motivator, in contrast, is more exposed to market factors, such as the price of resources (which, alone, may depend on regulation), workforce availability and wage negotiations and demand for medical services (which are on the rise).

Lastly, while the ethical motivator could, in theory, also set an environmental performance baseline, this would require that an organization not survive should it fail to fulfil minimum ethical standards, thus resulting in failure in its operations. For instance, if society as a whole does not approve of a

given ethical posture, the organization will then face a legitimacy vacuum and/or suffer from a lack of customers. Given the notion that the environmental concern of society as a whole is still considered low in Brazil and the fact that were such conditions to arise, they would most likely be encompassed by far-reaching regulatory measures, an ethical environmental performance baseline does not seem reasonable.

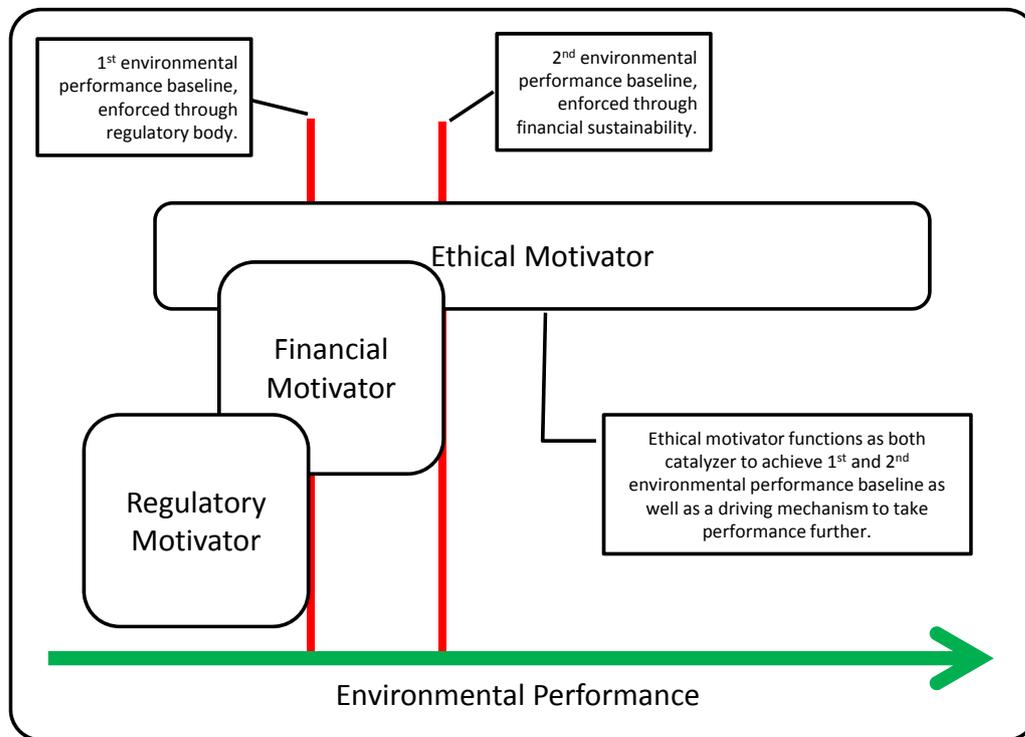


Figure 2: Proposed Motivator/Performance Model

A final note to this proposed model is that private and public hospitals might contrast in terms of the importance of the second performance baseline. While it is reasonable to assume that public hospital managers should also exercise great care with the financial issues surrounding their operations, it is a fact that they do, as a unit, function on a deficit logic. Private institutions on the other hand do need to generate revenues to cover long-term expenditure, or the ensuing threat to their existence should they fail to do so.

Regarding the actual implementation of environmental practices, the conclusion that can be drawn from this research is that there is a natural hierarchy of environmental priorities in hospital management, starting from the outputs and visible direct externalities of such institutions. That is, the first priority concerns correct waste handling, followed by waste reduction and then resource utilization efficiency. More elaborate strategies, for instance involving suppliers to develop more-sustainable logistics and consumables and active lobbying for more-comprehensive regulation on the issue, are of a higher nature in this hierarchy. Figure 3 illustrates the proposed model of actions.

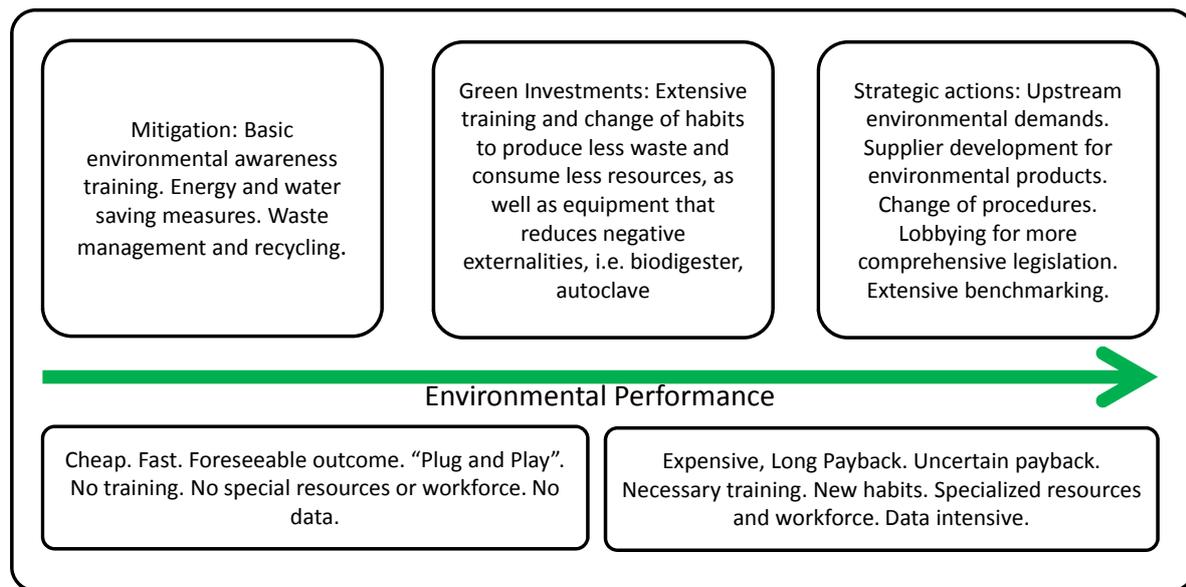


Figure 3: Conceptualization of environmental actions

While there is certainly no predetermined path that has to be followed as to which actions should be taken or in what order, the interviews demonstrate consistent patterns across hospitals in the implementations steps of environmental practices. Specifically, environmental concerns start with waste management, and energy and water consumption. Basic energy and water saving methods (such as LED bulbs and two-stage flushing) can be copied from other sectors' experiences without extensive or specialized knowledge. Basic recycling policies are also easy and fast to implement. As for reductions in infectious waste, although the techniques do require some effort in terms of training, they have proven efficacy and can be reasonably implemented without excessive financial resources.

A further stage of actions would involve greater financial and resource investments and involve extensive training and advanced equipment; significant processes and procedures to be carried out by hospital workforce may also be required. This might even require hiring a specialized workforce. The financial payback for such efforts will be longer than for basic mitigating actions.

A third stage proposed are actions that deeply modify services which are being provided (managing a patient's health to obviate treating disease), and the relationship of hospitals with their suppliers and regulators. Such advanced actions seek to avoid negative externalities, thereby moving the focus upstream in the value stream. Examples include lobbying for regulation that incentivizes environmental innovation and practices, and engaging suppliers in the effort to produce less harmful and environment-impacting medical supplies. Common characteristics of such actions include the change of habits, more complexity in dealing with external parties, and the intensive use of data for benchmarking.

The conceptual model proposed here recognizes that there is a natural tendency of hospital managers to pluck the "low hanging" opportunities regarding environmental actions, that is, to engage in environmental actions that are easy to implement without further complication or need for innovation. Such behavior is understandable in a sector that has hitherto all but ignored the issue, especially in Brazil, the market in question. However, the fact that even those organizations that are commonly believed to be the pioneers and leaders in environmental management are

showing increasing environmental impacts indicates that there is a general need for more strategic environmental actions in this sector if externalities are to be kept at current or lower levels in the future. As mentioned, the strategic actions might involve a more complex set of actors in the value chain of the whole sector and be blocked – or subsidized – by some of these actors. For instance, it was noted during the interviews that in the USA, Group Purchasing Organizations (GPOs) are the main buying channel of medical supplies by hospitals and that these organizations have the negotiation and financial power to require that medical suppliers change and adopt their product to fulfil environmental demands. Such practices are uncommon in the Brazilian market, thus, buying power is fragmented and hospitals have little to no leverage against suppliers to demand products that are more environmentally responsible.

Both proposed models relate to environmental performance (which this paper does not define). However, assuming that future regulatory and market changes will drive the environmental performance baseline forward, it is quite safe to say that it will over time; likewise, environmental actions implemented in hospitals will need to move from the mitigating to the strategic pole of the proposed conceptual model to keep up with future requirements. Such a move will require tailored actions and strategies for the sector.

Finally, we can say that environmental management in hospitals is still in its early stages, and that regulation on the matter is both very relaxed in terms of environmental performance and too strict to allow for environmental innovation in this sector. The dearth of academic research in this specific sector requires further efforts to advance from the proposed conceptual models to quantifiable research and management tools that can assist managers to implement sustainability actions in their hospitals.

Research limitations

Like all research methods, the case study methodologies have limitations. The first limitation is the possible bias from the researcher during the gathering and analysis processes of the research. The difficulty in distinguishing between variables and events during the research process contributes to this fact. Furthermore, the interviewees also introduce their share of bias to the research insofar as their answers are based on personal beliefs and perceptions, which, by definition, are subjective.

A second limitation of case studies is that they offer little basis for scientific generalization. Since the objective of this paper was not to provide an overarching theory, but rather to provide a very specific and incipient view into what motivates managers of accredited hospitals in Brazil to implement environmental practices, there is no aspiration to provide results that can be generalized. Thus, the results of this research can only be generalized theoretically.

Future Research Suggestions

Whereas this research has focused only on motivations for the adoption of environmental programs and critical actions being taken by some hospitals it has become clear that the topic offers rich research opportunities for the future. The particularities of health care services and incipiency of environmental actions require deeper investigation. Although some environmental performance measures are underway – often emulating the proven experiences from other sectors – a more strategic and specific approach is in need to develop solutions that can have the most impact in this sector.

On a strategic level, an implementation model and/or a classification model of environmental management practice tailored to the health care sector can be an important managerial tool to drive increased adoption of such practices. The specificities of hospital operations and the growing size of this economic sector call for managerial tools that can assist in developing and implementing environmental practices that enhance not only environmental performance but also help to keep health care costs under control. This is of the utmost importance, especially in countries with high resource depletion and/or environmental contamination and/or limited financial resources.

The models depicted in the literature review and the results regarding motivations and critical actions of hospital managers offer a good starting point to such an investigation. For instance, it became clear during the research that in general the exogenous risk proposed by Vastag, Kerkeres and Rondinelli (1996) and the environmental pressure dimension of the Abreu (2009) model are low given the fact that the overall attitude of Brazilian society towards environmental sustainability is still very relaxed. A comparison with healthcare institutions in other geographies where environmental awareness is high might provide interesting insights.

On a more practical level, a detailed case study of the historical development of the environmental practices in a leading hospital can offer a heuristic model for other hospital managers seeking to develop or enhance their environmental responsibility practices.

Finally, a more comprehensive survey of environmental practices encompassing a broader array of institutions can present a better understanding of how the sector as a whole deals with issues of environmental responsibility.

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