

ENVIRONMENTAL ADMINISTRATION IN BRAZILIAN ORGANIZATIONS: COST OR INVESTMENT?

1. SUMMARY

The main objective of the present article is to tell the empirical verification of environmental concern in some Brazilian organizations, verifying the impact of this on the creation of value for the same ones. Besides, it intended to establish the apprenticeship of the chosen sample of companies to find it measurable of their costs¹ and environmental benefits². For that, the authors tried to lift a rich theoretical base. For the empirical verification of the objective proposed in the article, the used method was a survey, with application of interviews based on semi-structured questionnaires. Of the 20 companies who were asked for, half was disposed to collaborate with the authors. After the analysis of the data was verified that the organizations possess great environmental concern due to legitimacy subjects and recognition for their stakeholders, since most do not have larger information on the impact in the creation of value for the company, for they still possess not perfect forms to improve environmental costs.

2. INTRODUCTION

The adoption of an environmental politics can have several meanings: a posture that delineates the approach for the administration of the waste to proceed; to control the pollution; to look for maintenance; to improve the productive process to become safer; the administration of the growth; the obedience to the laws; the administration of the energy and for the understanding. In that way, environmental politics have impact, not just in remain practices of businesses, but, also, on the companies accounting.

In general, environmental decisions are just made to accomplish environmental regulations, in other words, a reactivate approach instead of active to environmental costs administration, even the active approach being more promising in terms of prevention of environmental damages and costs reduction. For a company to make active environmental decisions, it must have information on costs and environmental benefits, being these, however, difficult to obtain, because they require system demand not find in the company, or difficult and expensive operation.

3. REASONS FOR ENVIRONMENTAL RESPONSIBILITY

BANSAL and ROTH (2000) point that the first organizational researches focusing the environment took into account the institutional regulated forces, the markets and the social pressures to the managers, who had to move to operate in a more responsible environmental way. Researchers recognize the paper of the regulating pressure “pushing” companies to be environmental responsible (FINEMAN and CLARKE, 1996; LAMPE *et. al.*, 1991; LAWRENCE and MORELL, 1995; NEWTON and HARTE, 1997; POST). Companies look for to obey to the legislations to avoid be responsible for certain environmental crimes, with penalties and fines. They also adopt these postures to maintain ahead of changes and to stay competitive (ARAGÕN-CORRÊA, 1998; CLARK, 1999; RONDINELLI and VASTAG, 1996). Pressures of the customers' market and suppliers, the local community's social pressures, environmental activists and the public in general help to induce the world companies for environmental responsibility (BERRY and RONDINELLI, 1998; BUCHOLS,

1991; FINEMAN and CLARKE, 1996; LAURENCE and MORELL, 1995; STARIK and RANDS, 1995).

Researchers also explore the economical reasons for the incorporate ecological responsibility. BANSAL and ROTH (2000) face it as a motivation for competitiveness. Anchored on the resources based vision, this perspective looks at the ecological answers of companies as an “ecological stamp”, green marketing and the implementation of EMS (Environment Management System) as sources of competitive advantage (RUSSO and FOUNTS, 1997; SHRIVASTAVA, 1995). In the beginning, it was believed that these answers would build corporate reputation, they would acquire competitiveness and they would create value for the companies (HART, 1995; RUSSO and FOUNTS). The ecological actions were also announced as cost reduction, due to the decrease of wastes and environmental responsibilities (LAMPE et. al., 1991; PORTER and VAN DER LINDE , 1995).

While previous research in organizations and environment look for reasons to corporate ecological answers, these, however, do not explain: (1) why do companies that face similar institutional pressures answer in a different way the adoption of ISO 14001? (2) why would a company adopt a national EMS and would be certified with ISO 14001 in another country?

4. ENVIRONMENTAL COSTS MEASUREMENT

Several reasons for companies’ interest to maintain an active approach for environmental costs, but two seem to obtain prominence. One of them concerns the fact that several countries have been increasing their environmental regulations significantly. These laws foresee enormous penalties or fines. The other factor concerns the fact that the companies are noticing that can be less onerous to prevent environmental problems than to have to remedy them. As SHIELDS, BELOFF and HELLER (1999) affirm “it seems to be a change in the approach of environmental regulations, passing of a command-and-control approach to a market addressed approach.” Like this, this new approach comes to demonstrate the successful work of understanding environmental concerns companies, becoming a subject of maintenance of the competitiveness in the companies. The corporations are discovering that to satisfy objectives of important businesses and to solve environmental concerns are not mutually excluding (HANSEN and MOWEN, 2001).

4.1 ECOEFFICIENCY

According to HANSEN and MOWEN (2001), the ecoefficiency affirms that the organizations can produce goods and more useful services at the same time that reduce the negative environmental impacts, the consumption of resources and the costs. Starting from this concept, it can be inferred that the improvements of the ecological and economical acting can and should be complemented. Besides, the improvement of environmental acting should not be seen as a charity subject, but as a subject of competitive need. Finally, the ecoefficiency is complemented to the maintainable development and it supports it. HANSEN and MOWEN (2001) affirm that “the maintainable development is defined as that satisfies the needs of the present without committing the ability of future generations to satisfy their own needs.”

Several incentives exist for the increase of environmental efficiency of the companies. First, customers are demanding “cleaner” products that are produced, used and discarded without the degradation of the environment, or at least, with reduced impacts. Besides, clean and safe work conditions attract good employees and result in larger productivity. Another

important point is the fact that companies environmental responsible tend to obtain, much easier, external benefits, smaller capital cost and smaller insurance rates. A better environmental acting can produce social benefits to human health, resulting in company's image improvement and in increase the sales of their products and services. To focalize in the improvement and environmental acting performance make the managers to become aware of the needs to innovate and to look for new opportunities, as for instance, new markets. A last incentive to be mentioned is the fact of the reduction of environmental costs to create or to maintain a competitive advantage.

The incentive of costs reduction is important and can be a key factor for competitiveness of an organization. According to HANSEN and MOWEN (2001) "environmental costs can be a significant percentage of the total operational costs and many of those costs can be reduced, or eliminated, through an effective administration." For instance, the knowledge of environmental costs and their causes can take the a re-project of a process that, as consequence, can reduce the amount of consumed raw material and of pollutant emitted to the environment, in other words, an interaction between the innovation incentives and costs reduction. For so much, a company should implement an analysis of the life cycle of their products to identify and to reduce the negative impacts to the environment. It is also possible the development of a database of best practical with relationship to environmental challenges.

In order of costs administration be effective, in other words, it takes to costs reduction, there is need that the information on environmental costs are supplied the managers and, for the supply of these, it is necessary to define, to measure, to classify and to attribute environmental costs to the processes, products and other objects of interest cost. Such costs should be related in separate way from eventual costs, so that the administrators can evaluate the impacts in the value creation for the company. To attribute environmental costs to products and processes reveals the sources of those costs and it allows identifying their fundamental causes so they can be controlled.

4.2 MODEL OF COSTS OF ENVIRONMENTAL QUALITY

It is interesting that the company considers their environmental costs in agreement with a consistent definition in a model of total environmental quality. In this, the ideal state is zero damages to the environment (similar to the state of zero defects in the total quality administration). As affirm HANSEN and MOWEN (2001) "damage is defined as the direct degradation to the environment, just as the emission of solid residues, liquids or gaseous thrown in this, or the indirect degradation, as the unnecessary consumption of materials and energy." Environmental costs can be called, then, environmental quality costs. In similar way to the quality costs, environmental costs are incurred costs because they exist, or could exist, a bad environmental quality. Because they are associated with creation, detection, correction and prevention of environmental degradation, environmental costs can be classified in four categories (HANSEN and MENDONZA, 1999):

1. Environmental prevention costs: costs of activities executed to prevent the pollutants production and/or wastes that could cause damages to the environment, also know as activities "P2." As examples of these, the evaluation and selection of suppliers, the evaluation and selection of pollution control equipments, the projection of processes and products can be mentioned to reduce or to eliminate the contaminants, personnel's development, environmental impacts studies, environmental risks audit, environmental researches execution, systems of environmental administration development, products recycling and ISO 14001certificate obtaining. This last one, being obtained when an organization implements an environmental administration

system that satisfies the international specific private patterns. Those patterns are concerned with the environmental administration procedures and do not indicate acceptable levels of environmental acting. This way, the certification works as a sign that the company is interested and disposed to improve its environmental acting;

2. Environmental detection costs: are the costs of executed activities to determine products, processes and other activities inside of the company that are accomplishing the appropriate environmental norms. The norms and environmental procedures that a company looks for to proceed are defined in three ways: (1) laws and government regulations, (2) voluntary norms (ISO 14001) developed by the International Standard Organization and (3) environmental politics developed by own administration. As example of these activities, environmental audits, products and processes inspection can be mentioned (to discover environmental conformity), the development of measures of environmental acting, the contamination tests execution, the environmental acting verification of suppliers and the contamination levels measurement;
3. Costs of internal environmental flaws: are costs of executed activities by the fact of pollutants and wastes have been produced, but they have not been discharged to the environment. This way, the costs of internal flaws are incurred when eliminating and to manage pollutants and wastes once produced. The activities of internal flaws can have one of two goals: (1) to assure that the pollutants and the produced wastes are not liberated to the environment, or (2) to reduce the level of liberated contamination to a level that is in conformity with environmental norms. Examples that could be mentioned are the operation equipment to minimize or to eliminate pollution, treatment and discard of toxicant materials, maintenance of equipments against pollution, licensing of facilities for production of pollutants and scrap recycling;
4. Costs of external environmental flaws: are the costs of executed activities after discharging pollutants and wastes in the environment. Accomplished costs of external flaws are the costs that were incurred and paid. Costs not accomplished of external flaws (social costs) are caused by the company, however, are incurred and paid for parts out of the company. They can be classified as: (1) those that result of environmental degradation and (2) those associated with an adverse impact to the property or the individuals' well-being. In both cases, other, not the company, arch with costs, although these have been caused by the company. Of the four categories of environmental costs, this is the most devastating. Examples of accomplished activities of external flaws are: polluted lake cleaning, stains of petroleum cleaning, polluted soil cleaning, materials and energy inefficient use, payment of requests compensation for personal accidents coming of bad environmental practices, damaged property restoration, earth restoration to its natural state and sales loss caused by a bad environmental reputation. It also includes medical cares greeting because of the polluted air (the individual's well-being), the loss of the recreational use of a lake because of the contamination (degradation), the loss of employments because of contamination (the individual's well-being) and the ecosystems damage because of discard of solid residues (degradation).

The costs for which the company is responsible are called private costs. The other costs are the social costs.

4.3 REPORT OF ENVIRONMENTAL COSTS

The environmental costs report are essential to an organization that wants to improve its environmental acting and to control its environmental costs. The report details the costs by

category, revealing two important results: (1) the impact of environmental costs in the company's profitability and (2) the amounts relative spent in each category.

Of the practical point of view, environmental costs will only receive attention of the administration if they represent a significant amount. Companies as Amoco and studies of the World Resource Institute point empirical evidences that environmental costs get to represent up to 20% of the operational costs (DITZ, RANGANATHAN and BANKS, 1995). This prominence points out that environmental costs can affect the company's profitability significantly.

In the environmental costs report, only 20% of the expenses are with prevention categories and detection and the great remaining majority (80%) are caused by flaws, in other words, those that exist due to the bad environmental acting.

4.4 REDUCING ENVIRONMENTAL COSTS

There are evidences that the costs of environmental flaw can be reduced when investing more in prevention activities (P2) and detection.

It is presumably that the model of environmental costs reduction base itself in a similar way of the total quality costs model. Perhaps the lowest environmental costs could be reached in the point of zero damages, as well as the point of zero defects of the total quality costs model. That point of view is compatible with the ecoefficiency notion. The idea underlying of the point of view of zero damages is that the prevention is cheaper than the cure.

Actually, zero degradation could be the point of the lowest costs for many types of concomitant activities. It is possible that the benefits in the first year of operation could exceed the initial investment. The decision of investing in a zero discharge system should be main and economically healthy and not just an act of mercy by companies. Even without the penalties, the fines and environmental process, a closed investment³ can be justified. With more companies becoming aware of the ecoefficiency possibilities, the demand for command and control approaches for environmental administration should decrease.

4.5 ENVIRONMENTAL FINANCIAL REPORT

The ecoefficiency suggests a modification in the reports of environmental costs. Besides telling environmental costs, why not to tell environmental benefits? In a given period, there are three types of benefits: income, current savings and costs reduction (continuous savings). The income refers to the revenues that flow inside of the organization due to environmental measures, as the paper recycling, new applications for non dangerous residues and the increase in sales due to an environmental image improvement. The cost reduction refers to the continuous savings of the costs that had been paid in previous years. Current savings refer to environmental costs reductions obtained in the current year.

When comparing the benefits produced with environmental costs incurred in a given period, a type of environmental financial demonstration is produced. Managers can use that demonstration to evaluate the progress (produced benefits) and the potential progress (environmental costs). It could also form part of an environmental progress report supplied to the shareholders. The cost reduction are the sum of the current savings more the elimination of environmental costs due to environmental measures of a previous period.

5. ATTRIBUTING ENVIRONMENTAL COSTS

Products and processes are sources of environmental costs, being possible to explain how environmental costs are attributed to products and processes.

Production processes can create solid residues, liquids and gaseous which are introduced in the environment. These residues, potentially atmosphere degrading, are causes of internal and external costs of environmental flaws, as for instance, the need to invest in prevention and residues cleaning.

The processes are not the only source of environmental costs. The packing is also. According to GRAEDEL and ALLENBY (apud HANSEN and MOWEN, 2001) in the United States, 30% of the whole municipal solid residues are packing material.

The products itself can be the source of environmental costs, as for instance, the discard of the inappropriate packing, done by a customer. These are environmental costs, after purchase and, most of the time, are arched by the society and not for the company, being, therefore, social costs. In some cases, environmental costs after purchase are turned into accomplished external costs. An example is the discard of piles.

5.1 ENVIRONMENTAL COSTS OF THE PRODUCT

The environmental total costing is the attribution of all the environmental costs, private and social, for the products. The private total costing is only the imputation of the private costs for the individual products. The private costing would attribute environmental costs, that are caused by the internal processes of the organization for products. It is a good starting point for the companies. The private costs can be attributed using the data created inside of the company. The total costs already demand the data collection that are produced out of the company, for outsiders. As soon as the company gets experience with environmental costing, it would be advisable that it expands the costs attributions of products and implemented an approach known as the cost evaluation for the life cycle.

The environmental costs attribution for products can produce valuable managerial information, as, for instance, to reveal that a specific product is responsible for much more toxicant residues than the others ones and like this, to suggest an alternative project for the product, or for its associated processes, more efficient or easy of using. It can also reveal that with the environmental costs attributed, the product is not profitable, what can mean that the elimination of the product can mean a significant improvement of environmental acting and economical efficiency. A lot of opportunities can come from the knowledge of environmental costs and the right attribution that it needs.

5.2 ENVIRONMENTAL COSTS BASED ATTRIBUTIONS ON FUNCTION

Most of the costs of accounting systems present two environmental costs inserted inside of the indirect production costs. To be separate in a group of environmental costs and through the costing based on function, these costs can be attributed to individual products using directors in unitary level, such as direct labor hours and machine-hour. This approach can come to work well for homogeneous products, but it can also produce distortion of costs with multiple products, in other words, in companies with products diversity, being precision a critical function attribution.

5.3 ENVIRONMENTAL COSTS BASED ATTRIBUTIONS ON ACTIVITY

Cost based on activities facilitates environmental costing. Environmental costs tracing for responsible products is a fundamental requirement for a good environmental accounting system. It is essential that cost attribution uses the causal relationships, being done by the ABC costing.

As already mentioned, the attributed costs are private, but social costs are also possible to be allocated. If they happen and the company is capable of measure them, a more complete costing approach can be used.

The environmental costs attribution to multiple activities allow the managers to see environmental economical impact relative to each one of the products. As environmental costs reflect environmental damages, then environmental cost for unit can also serve as an index, or a measure, of product cleaning. The “dirtiest” products can be the focus of attention for the environmental acting improvement and economical efficiency.

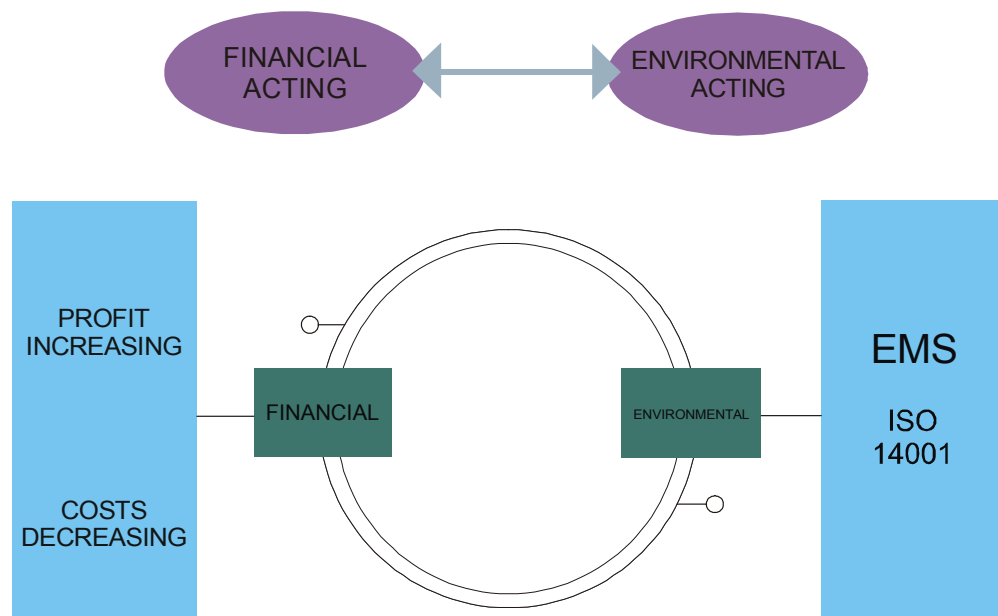
6. EFFECTS OF ENVIRONMENTAL ACTING ON THE FINANCIAL ACTING

According to REIS (2002) “environmental acting represents the results quantified in an Environmental Administration System, in what concerns the company’s control of environmental negatives impacts of activities and products, basing on its objectives and environmental politics guidelines.”

Like this, the adoption of an Environmental Administration System can generate contributions that would justify its implementation and, for that, great part of the pollutant companies are working one excellence in environmental acting.

PORTER and VAN DER LINDE (1995) place that environmental acting of a company is for instance reflex of the elimination of the its own inefficiency, that can be represented, for the waste generation.

Treating of variable cost, according to SCHMIDHEINY (1992) the resulting costs of wastes of raw materials, residues and inefficient processes can be minimized by the improvements obtained by the Environmental Administration System. Cost reduction, under the prism of wastes, can mean substantial financial rewards. However, to reach a great position of environmental administration there are needs for investments, that can, however, to be muffled with the EVA effectiveness.



Relationship Analysis between Environmental Acting and Financial Performance

Source: REIS (2002)

7. ENVIRONMENTAL ACCOUNTING FOR RESPONSIBILITY BASED ON STRATEGY

To improve environmental acting, the most appropriate it would be the adoption of a continuous improvement structure. According to Scorecard (Balanced Indicators Panel), an environmental structure is the fifth possible structures. The Scorecard creators mention in a specific moment that a company adds an environmental perspective to their Panel (KAPLAN and NORTON, 1996). According to HANSEN and MOWEN (2001):

“...accepting the ecoefficiency paradigm, the inclusion of an environmental perspective is legitimate, because the environmental acting improvement can be the source of a competitive advantage (the criterion for a perspective is included). An environmental administration system based on strategy supplies an operational structure to improve environmental acting. The knowledge of the known key environmental activities is fundamental for any project change for the necessary process to improve environmental acting. Like this, the Scorecard structure supply objectives and measures that are integrated to reach the global goal of improving the global acting.”

7.1 ENVIRONMENTAL PERSPECTIVE

HANSEN and MOWEN (2001) identify, at least, five essential objectives, for environmental perspective: 1) to minimize the consumption of virgin raw materials; 2) to minimize the use of dangerous materials; 3) to minimize the energy requirements for production and use of the product; 4) to minimize the liberation of solid residues, liquids and gaseous; and 5) to maximize the opportunities of recycling.

In relation to the first three objectives, these are associated with materials and energy and are not concern to the use of more energy and materials, besides the necessary (conservation subject) and the fact that it should look for means of eliminating the use of materials and energy that damage the environment (subject of dangerous substance). According to Hansen and Mowen, (2001):

“Like this, possible measures would be the total amounts and unit amount of the different types of materials and energy (for instance, kilograms of toxicant chemical used products), productivity measures (used/materials, used/energy) and costs of dangerous materials (energy) expressed as a percentage of the total of the materials cost”.

There are two ways to the fourth objective be reached: (1) using technology and methods to prevent the liberation of residues, once produced, and (2) avoiding the residues production when identifying the fundamental causes and to re-project the products and processes to eliminate the causes. The second is the one that has the preference. The first one was similar to obtain the product quality through inspection and re-work (to inspect the quality). However, as affirm HANSEN and MOWEN (2001), “the experience with the quality administration has been revealing the approach that is much less onerous to do the right thing in the first time, than to have to rework on it.” That is a result that can also be shown true for the residues control once produced. HANSEN and MOWEN (2001) suggest that “the acting measures for the objective includes kilograms of produced toxicant residues, cubic meters of waste, tons of greenhouse gases produced and the reduction percentage of packing materials.”

The fifth objective already emphasizes the conservation of no-renewable resources when reusing them. The recycling reduces the demand for extraction of additional raw materials and environmental degradation, while reduces the requirements of residues discard

placed by final users. In what it tells respect to the measures, HANSEN and MOWEN (2001) affirm that “including the kilograms of recycled materials, the number of different materials (as smaller the number, better), the number of different components (as smaller the number, better for the recycling), percentage of re-manufactured units and the produced energy of incineration.”

7.2 THE PAPER OF THE ADMINISTRATION OF ACTIVITY

HANSEN and MOWEN (2001) affirm that “the environmental activities analyze is critical for an environmental control’ solid system”. As already mentioned, for environmental costing based on activities, a first step is the identification of environmental activities and evaluation of their costs. For a first control stage, it is essential to know environmental costs and which products and processes are motivate of these causes. Made that, environmental activities should be classified as the ones which add value and the ones that do not.

The activities that do not add value can be identified as those that are not necessary if the company was operating in an efficient and great environmental state. PORTER and VAN DER LINDE (1995) demand that “environmental pollution is equivalent to the economical inefficiency.” For instance, if the production of pollutants is equivalent to the economical efficiency, then, all the activities of flaws should be labeled as activities that do not add value. These are not the only activities that do not add value. Detection activities, as, for instance, inspection, they also do not add value.

HANSEN and MOWEN (2001) affirm that “to adopt an ecoefficiency paradigm implicates that activities will always exist simultaneously with environmental prevent degradation and with a possibility to produce a state of economical efficiency that will be better than the current state.”

Therefore, environmental costs that do not add value are the activities costs that do not add value. Costs those that represent the benefits that could be obtained when improving environmental acting. “The key to obtain those benefits is the identification of the key causes behind the activities that do not add value, and then to re-project products and processes to minimize and, at last, to eliminate those activities that do not add value.” (HANSEN and MOWEN, 2001)

7.3 PROJECT FOR THE ATMOSPHERE

HANSEN and MOWEN (2001) define the “special approach of the project driven to minimize the activities that do not add value as project for the atmosphere.” It involves products, processes, materials, energy and recycling, in other words, the whole product’s life cycle and their effects on the environment should be considered. Manufacture processes are the direct sources of many solid residues, liquids and gaseous and many of them end being liberated in the environment. A lot of times, the re-project of a process can eliminate the production of such residues. Projects of products can also reduce environmental degradation, as for instance, projects of disposable products to facilitate the recycling.

7.4 FINANCIAL MEASURES

Environmental improvement can produce beneficial and significant financial consequences when the company reaches a favorable substitution between activities of flaws and prevention activities. When the company takes decisions ecoefficiently, environmental total costs tend to decrease with the improvement in environmental acting and, this way, tendencies of environmental costs are an important measure of acting. There is possibility of

preparation of an environmental costs' report that do not add value for the current period and to compare it to the costs that do not add value in the previous period. HANSEN and MOWEN (2001) worry in the way that costs and tendencies are measured. The reductions of costs should be attributed to environmental improvements, and not just to unload some environmental responsibility. Like this, the external flaws costs should reflect the average of the annual obligations that result in a current environmental efficiency. This way, just in case environmental acting stays unaffected, the future cost will also stay unaffected. In case there is an environmental acting improvement, the value "saved" it will be attributed to him.

Another pointed possibility for HANSEN and MOWEN (2001) it is to compute the total environmental cost as a percentage of the sales and to trace that value for several periods (all environmental costs and not only those that do not add value). The authors use a graph to facilitate the visualization. As still HANSEN and MOWEN (2001):

"...if ecoefficiently decisions are being taken, a reduction should be observed in the environmental total costs. That implicates that there is a favorable substitution among investments in prevention activities related to environment and the cost reduction of environmental flaws. That tendency should refuse as ecoefficiently investments are made."

HANSEN and MOWEN (2001) point in other graphic illustrations that could also be used for specific areas. For instance, a graph of bars can be used to show the total amount of one pollutant emitted every year. A section graph can be useful to present to the administration the dangerous residues for category: incinerated, recycled, thrown in garbage deposits, treated and injected in deep wells.

8. ENVIRONMENTAL ADMINISTRATION SYSTEMS AND ISO 14001

It is waited that an EMS induces the incorporate environmental responsibility for establishing appropriate organizational structures . While EMS's change among companies, there are some common elements. An EMS requests that a company identify environmental goals, general and objective, that come to develop an environmental politics. The company has to identify environmental impacts as well as pertinent environmental regulations imposed by several government levels and other local authorities. It also needs to set up an operational control administration, monitoring procedures and programs for their environmental impacts. It is necessary to check that employees are attentive to the objectives environmental politics established, as well as environmental aspects of their own activities. The whole process requests a documentation system structured that allows the administration to obtain reports. Finally, an EMS requests audit, as much of the system as company's environmental control. Some prefer intern audit, while other opt the external ones, because of incapacity or search for external opinions.

ISO 14001 is the pattern EMS developed by International Organization Standardization (ISO). It also requests a similar apparatus of procedures and structures with typical EMS, as described. However, while EMS can be personalized "home" to satisfy the needs of organization, to obtain the ISO 14001 certification, EMS needs to be registered and the company needs to stick above all the procedures related.

The audit expresses and the certification incurs in costs. In case the company is already implanting a sophisticated EMS, the additional costs to obtain the ISO 14001 certification will be low. As it mentions BANSAL (2002) "the costs do not seem to be a barrier for the companies. There were certified, even, companies that are suffering financial difficulties." The certified companies for ISO 14001 can attract customers that would not have, in case they did not possess, as it mentions JIANG and BANSAL (2003), Ford and

General Motors are demanding certification for their suppliers. Obtaining larger revenues could compensate the costs of ISO 14001 certification.

JIANG and BANSAL (2003) place that it is believed that ISO 14001 provides a systems approach and an environmental subjects in a company, in the same way that any EMS: first it intends the company to reduce the negative environmental impacts, both for processes control and technological innovations. Second, it emphasizes, uninterrupted improvements that defend an attitude or culture organizational that it is always perfecting itself accordingly to the rules and regulations and, even, exceeding patterns. Third, requests processes structured to identify and to solve problems and make improvements, as, for instance, demanding development programs of human resources, own documentation and audit processes.

JIANG and BANSAL (2003) suggest that the training and documentation address for a systematic reduction form of discrepancies in environmental practices, in addition, the exam continuous helping to maintain or to elevate the patterns and opportunities for additional improvements. Finally, an EMS encourages employees' participation, formal processes of training, knowledge process of all the managerial operations and identification of environmental aspects, intending with the search for improvements and reduction of environmental impacts, creating an environmental conscience in the employees.

Like this, in way different from EMS, ISO 14001 was born with the credibility and authority that it comes from being a product of International Organization Standardization (ISO) that already possesses success with the ISO 9000 quality administration series, being one of the more influential pattern composers of the world. With that, ISO 14001 got it legitimated from the beginning.

9. THE PAPER OF ENVIRONMENTAL ACCOUNTING

The accounting is known as a patrimonial control system of information with purpose of to evaluate the acting and to facilitate the decision process. But to reach those goals, it needs to institute a group of concepts and a methodology that represents all the events happened in the company. It also happens that in the atmosphere where those events are happening, new facts that even little time behind were not important, are being considered, as the case of environmental concern, appearing the perception need to the accounting methodology, verifying if it is prepared to assist the new problems imposed to the companies and to society.

It has appeared this way the terms Ecological Accounting, Green Accounting or Ecobilan, that appear in some specialized magazines in the accounting area. According to TINOCO (2000) "there are tries to make a comparison with the Traditional Accounting and Environmental Accounting, referring to Ecobilan as a Managerial Accounting, to Negative Value Added as the General Accounting and to the Environmental or Ecological Balance as a Social Balance."

TINOCO (2000) defines: "in ecobilan, the balance intends to analyze the production processes with the purpose of turning them less pollutant. Negative Value Added is the amount of the expenses that the companies should accomplish to reestablish the environment that they degraded and they also recognize environmental provision. Environmental Balance, presents the physical and monetary environmental information."

The use of physical data in Environmental Balance is justified because it allows the environmental situation analysis of a company. No matter how much the calculations of those data are defective, since the information is found in insufficient physical amounts and they do not take into account the effects on the environmental pollution, varying of place or period of the year, this is the only analysis form known by now.

According to the United Nations Organization (UN) (1989), the first step for the accounting treatment of environmental costs is to separate them from the other costs and then measure environmental cost of the company.

In what it concerns the investments of the environmental passive, it can be supplied and allocated to Environmental Balance, as well as all the other environmental provisions linked to the Negative Value Added.

With these attitudes and in spite of the flaws that could happen during the environmental data quantification, it is possible to analyze environmental situation of a company. For the users of the accounting information, the popularization of environmental costs only tends to improve their evaluations due to the fact that, in general, the managerial leadership is very linked to the competitive advantage.

In the activities costing, the costs are the important activities developed for specific ends. Those activities are important because they exercise direct influence to the economical-financial result, determining aspects that could move away companies from the market in function of:

- Customers' loss for competitors that manufacture cleaner products;
- Investors' loss who have environment concern;
- Credit loss in finance market;
- Government penalties, with substantial fines that could affect cash flow and even containing the business.

As the cost for activities, environmental costs will be identified through consumed resources by the control activities, preservation and environmental recovery. It is shown efficient for environmental economical administration, however, this costing, no matter how much it is the best among all, cannot be considered the best ever, but it is the better approach of the reality nowadays.

To begin the whole investment process in environmental area and to define future costs, the process should suffer evaluation providing the following aspects:

- If the activities of the company will generate impacts on the environment, where they will have origin and where they will ponder;
- Analyses of technological alternatives in order to avoid or to reduce the impacts;
- Economical-financial evaluation of the possibility of the company to come to make new investments in environmental area.

Studies that evaluate the needs for environmental preservation, allied to activity costing system, can optimize the results of the company. But only the environmental administration system implementation by itself is not enough. It is necessary an entire accompaniment, from the initial process, as well as, the verification of the results; if they have being rendered accomplished as expected and to take the necessary measures of correction. To control the acting also assures the final quality and avoids costs.

Through the activity costing, company's directors could have important information of environmental protection, as the costs of each activity of the process, costs of other involved activities, results of the control center, environmental control costs and production's environmental costs.

In the economical aspect, environmental costs' strategy identifies the efficiency and effectiveness of resources application, investigates the weak points and optimizes the strong points of the process.

According to RIBEIRO (1998), “environmental costs are represented by the sum of all resources costs used by activities developed with the purpose of control, preservation and environmental recovery.”

In large companies that involve or depend on the environment, all the processes, from the production, will have to contemplate environmental costs.

RIBEIRO (1992) says that “economical environmental administration evaluation of a company could intend the confrontation of the volume of environmental impacts in each period, with the volume of:

- Investments accomplished in nonpolluting technologies of permanent nature;
- Specific raw material, consumed for protection, preservation and environmental recovery;
- Labor hours consumed;
- Machine hours.”

10. METHODOLOGY

To verify environmental concern empirically on companies and the impact of this on the value maximization in a positive way, besides placing the apprenticeship, the sample of chosen companies, in a measure of environmental costs and benefices, the used method was a survey with application of interviews based on semi-structured questionnaires, containing 18 half-open questions, for 20 companies, of the which the authors obtained return of half of them.

All the analyzed organizations possess revenue superior of US\$ 2 million/month (about R\$ 6 million/month) and the interviews were all accomplished with their own directors or with their administrative directors. Among the interviewed companies, we can mention very large national companies (Petrobrás, SABESP, Boticário, Gerdau Group) and other great companies for export and internal market (Regina Party Items, Asteca Beverage Company, Funada Beverage Company, Vitapelli Tannery, Santa Marina Butchery and a Fiber Panels Factory). The authors had the concern to apply the interviews in companies that already had something developed related to environmental subject and to hear the directors involved with environmental politics of the referred companies.

The data were compiled in a spreadsheet and it was made statistical analysis of the results with the use of resources of the Microsoft Excel software.

The open answers were also taken into consideration by authors.

11. DATA ANALYSIS

It was verified that 90% of the interviewed companies do recycling of the material used in their productive process or of the eliminated residues. All the companies affirmed to possess some physical equipment for environmental prevention control but 40% really worried in passing these values to a “paper” in different bills and only 20% of the companies accomplish a more detailed accounting.

Most of the companies (90%) possess preservation culture, seeking through norms and internal regulations. The others affirmed to just have environmental concern because they go on fiscalization by government organs.

Ninety percent of the companies said that accomplished previous study in the implantation cost but they did not know how to publish the percentile that represents of the net profit after the income tax.

Of the interviewed companies, about 30% said that register environmental costs through Internal Systems (EMS). Of these, 60% use environmental reports in the decision

process, that are supplied by the company's accounting, and in 70% of the interviewed companies environmental costs are evident in the accounting.

For half of the companies it is visible the impact of environmental costs in the value maximization of the company, but they did not know how to inform the percentile of the corresponding net profit.

Half (50%) of the interviewed companies show off their environmental project to the community, but only in 10% of them affirm to have noticed a better profit in relation because of the popularization and, again, they do not know how to inform the percentile corresponding to the net profit after the income tax.

For half of the companies (50%) the balance does not intend to analyze the production processes, with the purpose of turning them less harmful to the environment (Ecobilan).

Seventy percent answered that the balance does not expose the percentile of the net profit after the income tax that the company should accomplish to reestablish possible degradations accomplished by the company (Added Value).

In 90% of the interviewed companies there are environmental audit. In half of them, there are internal audit and in the others, it just internal or external.

The concern with the ISO 14001 norm is large among the interviewed companies. About 20% of them they already possess the same, other 70% intend to implant it and 10% do not only have and do not intend to implant it.

In half of the companies (50%) interviewed the costing used for environmental costs was absorption, which comes to reinforce the hypothesis that these expenses, most of the time, are not considered representative for the company.

Most affirms that there was not revenue, just economy with the adoption of certain environmental measures and, even so, it did not get to interfere percentually in the value maximization of the company. In spite of that, second some respondents, is better to obtain this than any revenue, besides the fact of they are contributing to the environment.

It was noticed that in companies with larger revenue the investments in technologies returned for environmental administration are much larger proportionally to the others, independent of the activity branch.

In general, the companies worry about environment in a internalize way, even without needing to suffer audit. For half of them, the image subject is very important, because they make a popularization of their work, however, it paybacks little financially, therefore only 10% of them revealed to obtain an improvement in the value maximization due to their customers' recognition.

Some important considerations were obtained along the interview that are worth to be said. Here are some examples:

According to WOH (World Organization of Health), for each US\$ 1 expend in Basic Sanitation, US\$ 5 are saved in public health.

The slime, main residue in the water treatment, is sent to a Sewer Station of Treatment and, together with the biosolids residues, becomes fertilizer.

One of the interviewed companies noticed that there was a 16 ton/day waste of wood from joineries of the area and resolved to implant a wood preparation machine to burn it in ovens (kettle). Later, it passed to also use peanut peels.

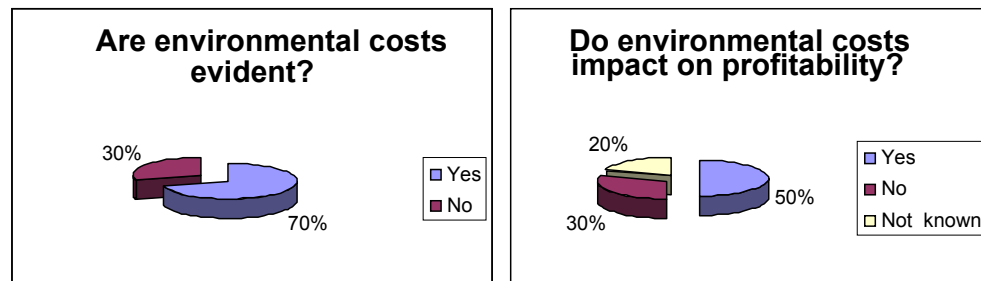
Other company started to use the recycled water of the factory's production line in bottle wash, on gardens irrigation, on floor wash, to wet the roof, lowering the temperature of the factory (it was not possible the use of air conditioning nor sprinklers in the factory, because they work with food), among others.

One of the directors said that SEBRAE-SP has a financing line, with no need to payback, only for factory improvement and for companies that worry about the environment. The company arches with 20% of the project and SEBRAE, with the remaining 80%.

One of the interviewed companies complained of environmental archaic laws in Brazil. He said that he cannot use recycled material to produce plastic bottles in Brazil. The same is allowed in Germany, which uses up to 60% of other bottles for making a new one. Due to this problem, the Brazilian companies do not worry in pick up the old bottles (used ones), causing serious damages to the environmental, because they are not biodegradable.

The tannery interviewed, for being in a very chase section, worries a lot about environmental preservation. By the fact of using a lot of water in their productive process, it has got its own Water Treatment Station (WTS), appraised in US\$ 2 million (about R\$ 6 million). Now, 50% of the used water (3,5 million liters of water a day) are recycled. They are enlarging their WTS so this percentile gets up to 100% (7 million liters/day).

Together with the water, there are several chemical substances that are reused in order to not pollute the environment and also to save resources. Some of these reused substances save US\$ 3.000 (about R\$ 9.000) a month. Only an isolated substance, the chrome, responsible for the tanning, saves other US\$ 3.300 (about R\$ 10.000) per month. Besides not polluting, because these substances are highly pollutant, the company saves.



12. CONCLUSIONS

As already explained, the main objective of the present article is to tell the empirical verification of environmental concern in some Brazilian organizations, verifying the impact of this on the creation of value for the same ones. After the data analysis, the authors could end that, in spite of the great environmental concern of the companies, they do not have very clear the value of the done investment and the return of this for the company, independent of what they have done, or not, previous studies of environmental impact. Even the ones that possess internal systems that allow to find environmental costs, and even some that provide visualize the impact of these costs on the net profit after the income tax, they do not know how to inform the real effect that the whole environmental control has on the economical and financial acting of the company. The respondents revealed that environmental concern is a matter of legitimation to their stakeholders, in other words, to all the direct people or indirectly involved with the company.

Besides, the article intended to place in which apprenticeship, the chosen sample is in the measurement of costs and environmental benefits. Half of the interviewed companies affirm that the impact of environmental costs is visible on the value maximization, but how can they affirm that not knowing how to inform which the percentile of the net profit? Or what is the economical value added? Or what is the profit before interests, income tax, depreciation and amortization? Besides, for half of the companies (50%) the balance does not intend to analyze the production processes, with the purpose of turning them less harmful to the environment (Ecobilan) and 70% answered that the balance does not expose the percentile of the net profit after the income tax that the company should accomplish to reestablish

possible degradations accomplished by the company (Added Value), leaving clear that these still have a long road to travel to reach the excellence in environmental costs. Administration.

Through the bibliographical searching of the last ten years, it was not found a model that correlates environmental administration and investment returns, in other words, the proportionate financial result for environmental investment.

For some companies, environmental costs are not, perhaps, a very expressive portion of the total cost and the improvement in the value maximization it is just the recognition and customers' fidelity that already developed environmental conscience. However, that affirmative could only be made starting from the moment that the companies are aware of the magnitude of their environmental costs. To be aware could, even, to open new perspectives of products and markets, until unknown for vision lack.

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¹ Cost: spent with raw material that already entered in the production associated to other production expenses

Expense: the whole sacrifice of the company to obtain revenue.

² Revenue: it corresponds to sales of goods or services rendered

³ Investment: spent with return intention.