



## Sustainable characteristics and port competitive reflections: a case study in the Ponta do Felix port terminal

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### Abstract

The present study aimed to analyze how sustainable actions are related to the competitive port, with the best market positioning and respective regional socio-environmental development, still incipient research in the national scope. To achieve this objective, a methodological framework was adopted with the application of semi-structured interviews with the directors of the Ponta do Félix Port Terminal, whose analytical categories focus on John Elkington's three pillars of sustainability, as well as Strategies Competitive Generics, by Michael Porter. From the content analysis, following the guidelines of Bardin, two predominant strategies were verified: (i) Differentiation, considering that the service rendering is considered unique and differentiated in operations and quality; And (ii) Approach, which characterizes a service aimed at customers who work with special products, demanding strict environmental demands. This study confirms, starting from the "Porter Hypothesis", the relationship between sustainability and competitiveness in a company, stimulating innovation and cost reduction, thus obtaining a competitive advantage due to the adjustments to environmental regulations. The study brings practical contributions to managers of the port segment about the organizational competitiveness linked to environmental quality standards, such propositions can guide the concentration of new positions under the sustainable port perspective as a business strategy. In addition, from this study also emerge contributions to the scientific community regarding the filling of the literature gap in the area in question.

**Keywords:** Competitive advantage. Sustainability. Ports. Regional development.

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## Introduction

As a result of the climate change and environmental impacts of the last decades, the growing concern about the preservation of the environment is evident, reflecting also in scientific studies about this approach (GUO; LO and TONG, 2016; OLAVE and JUNIOR, 2014; RODRIGUES and NETO, 2010). It can be seen, for example, in the organizational context, that the adequacy of organizations to this reality through compliance with pertinent legislation, as well as voluntary actions, has contributed to generate a competitive differential in the most diverse segments, in particular, and without This statement is limited in the port segment, whose operations cause a high impact on the environment (KITZMANN and ASMUS, 2006). In order to minimize impacts, companies rely on environmental management systems, which gather information on aspects that impact the environment and support the decision-making process (POKORNY, 2006).

Environmental management in a company provides opportunities to add value, in addition to gaining competitive advantage through public perception, cost savings and additional income (BARBIERI, 2007; PORTER and VAN DENDER, 1995). It is a fact that a company that recognizes its environmental responsibilities would be minimizing its financial risks in the future, and consequently would be paying lower insurance premiums, in addition to obtaining lower interest rates on financing (MELLO, 2010).

Kitzmann and Asmus (2006) argue that, In the approach called "Porter Hypothesis", companies compliance with environmental standards boosts competitiveness, contrary to the traditional view, which they attribute to it as a barrier to development. This new logic considers pollution as a sign of productive inefficiency and waste, not something inevitable to the process. Environmental regulations become opportunities for improvement and new business. The ports, being more environmentally friendly, have more advantages over the others, because they reduce costs and impacts, and also because they attract certain cargoes (KITZMANN and ASMUS, 2006).

The "Porter Hypothesis" is based on the argument that "being green is being competitive". Some authors like Carrieri (2003) and Sanches (2000) affirm that the adoption of environmental management in a company can make it more competitive. According to Porter and Linde (1995), this advantage is due to investments in environmental management and technological innovation, avoiding waste and increasing productivity and efficiency in operations. What would be a burden, merely complying with environmental laws, generates a win-win situation, in which the environmental preservation, economic growth and quality of life of the population become simultaneously evident.

In this context, the sustainability theme has been approached in a broader sense, in a participatory way among organizations (OLAVE and JUNIOR, 2014; HALLSTEDT, 2017). It requires a non-immediate attitude, but a short, medium and long-term projection aimed at the continuity and success of organizations (ALMEIDA, 2002). However, according to Kitzmann and Asmus (2014), under the Brazilian port system environmental management is still underdeveloped. This lack of action on the part of the port companies is due to the fact that they consider as an expense merely to comply with environmental regulations (KITZMANN and ASMUS, 2006). There is a lot to do to incorporate the environmental vision into the day-to-day life of the port. This allows companies to invest in infrastructure in accordance with environmental standards,

making terminals more competitive. The authors identify environmental preservation as a factor of sustainable competitive advantage, especially when added to the actions of corporate social responsibility.

According to the above, this study aims to analyze how the sustainable actions are related to the competitive port, as well as the best market positioning and its respective regional socio-environmental development, whose analysis will consist of the Port Terminal of Ponta do Félix, Located in the city of Antonina, state of Paraná, Brazil.

In the design of the practical appeal, this research shows some guidelines to the managers of the port segment about the organizational competitiveness linked to the environmental quality standards, being able to guide the concentration of new positions under the sustainable port perspective as a business strategy. In addition, the study also promotes a deeper understanding of sustainable actions in port activity. These proposals are supported by the progressive need of companies, which are embedded in a constantly evolving and increasingly demanding environment regarding the quality of products and services, especially in the port area, whose environmental regulations are gradually stricter. In this regard, for market support, the port terminals are required to have greater flexibility and adaptability, both due to the handling of a given product and to the port operation in general.

Studies such as that by Porter (2004) and Kitzmann and Asmus (2006) show that there is a proportional relationship between adequacy to environmental issues and competitiveness. The ports of Paraná are located in a region with potential for economic expansion, and it still lacks more intense studies in relation to the set of strategic actions, with special attention to environmental issues, which can bring a greater competitive advantage over the others Port terminals in other regions.

This study is structured in five parts: the present introduction; the literature review containing organizational sustainability and Triple Bottom Line, competitive advantage in the port area, and competitive advantage according to the premises of Michael Porter; Methodological procedures; Analysis of results; And, finally, the final considerations about the results found, the corroboration with other studies and the proposals for future research.

## **The empirical theory referential**

### **Organizational sustainability and the triple bottom line**

The term sustainability has become known through the Brundtland Report, also known as "Our Common Future," published by the UN World Commission on Environment and Development in 1987. This report related economic development with the preservation of the Proposing to meet the needs of present generations without exhausting resources so that future generations can meet their needs (CMMAD, 1988). Elkington (2012) defines sustainability as a principle that ensures meeting the economic, social and environmental needs of present and future generations.

Some authors define sustainability as a process or system that is characterized by the use of natural resources, and they are available for a certain period, or for an indeterminate period. Thus, the principle of using natural resources without compromising future generations is followed (CARBONARI et al., 2011). At the same time that natural resources are not put at risk, attitudes are developed that minimize their im-

pacts and preserve resources so that people can use them in the future (RAZZOTO, 2009). According to the same author, a society puts into practice sustainable attitudes only when acquiring a sustainable thought, reflecting in its daily acts, having a greater awareness of preservation, suppressing its old habits, This, in fact, is a sustainable practice (RAZZOTO, 2009 ).

As a result of Elkington's (2012) definition of sustainability, the "Triple Bottom Line" concept was created, which involves sustainable management, measuring the performance of companies in economic, social and environmental aspects. This became part of the strategic planning of companies, with the goal of promoting innovation and value creation (ELKINGTON, 2012). By monitoring these three aspects, the organizations benefit, and consequently their respective stakeholders (CARBONARI et al., 2011). According to Chaves et al. (2005), each activity of the company that interacts with each other, based on the "Triple Bottom Line", can generate a competitive advantage. The strategic decisions of the company must be based on these three aspects, denominated like pillars of the sustainability, as described below:

**Economic Pillar:** refers to the financial results of the organization. According to Sachs (2000), these results are ensured when their actions promote economic development in several sectors, not only depending on a single activity, when promoting food security, insertion of new technologies, encouragement of scientific research and their insertion in the international economy. Barbieri et al. (2009) highlights the achievement of profits for the shareholders, reduction of risks, valuation of shares and generation of jobs.

**Social Pillar:** It involves social welfare issues, especially in meeting social demands, such as reducing inequalities, creating respect and involvement of workers, partners and the community in organizations (ELKINGTON, 2012). Sachs (2000) argues that the reduction of inequality is linked to a set of actions that influence the distribution of income and access to employment, giving quality of life to the worker, as well as equality in access to social services . They are actions that aim to promote the valorization of human rights, the fight against corruption and non-discrimination in the workplace (BARBIERI et al., 2009).

**Environmental Pillar:** Elkington (2012) brings the concept of natural capital. Their assessment is not only about giving value to a natural species, but also evaluating what benefits they can bring to the environment. Care must be taken in the preservation of natural resources, seeking alternatives to their use. This involves promoting actions to reduce the use of materials and energy, reduce the emission of pollutants, replace toxic components, reuse and recovery of materials. (BARBIERI et al., 2009). This can provide goods and services at competitive prices, which at the same time contribute to the reduction of environmental impacts and to customer satisfaction that gives preference to products and services elaborated in a sustainable way (ELKINGTON, 2012).

According to Sachs (2000), sustainable development to be complete, there must be concern about all three aspects together, as an example, even if pollution is reduced, there is the issue of deforestation and predatory hunting, which are Environmental and economic problems that arise from some social issues.

### **Competitive advantage at port**

According to Lopes (2011), competition among ports refers to competition between port companies, being terminal operators, or those that are related to specific operations. Each company aims to achieve the maximum growth, with respect to its services, in terms of added value or in other ways. Thus they seek to obtain competitive differentials that can help achieve this goal.

It is understood in the scope of many companies, as a barrier to development, that port terminals must invest to adapt to environmental demands, reflecting the products and services offered. These demands stem from a series of environmental, cultural and structural liabilities. Such inconsistencies must be addressed in order to ensure the full functioning of ports without affecting economic, social and environmental aspects (KITZMANN and ASMUS, 2006).

It can be said that environmental management can be inserted in organizations as a business strategy, adding value to the port activity. By transforming the port authority into an agent for environmental planning and management, actions will focus not only on solving environmental problems but also on profitable competencies (MONIÉ and VIDAL, 2006). Likewise, state environmental regulations can be used by organizations as a profitable way to produce them before the market, thus achieving competitiveness. Of course, as we seek better environmental alternatives, there is a social evolution, so that, given the need for environmental innovation, this becomes profitable for organizations (PORTER and LINDE, 1995).

### **Competitive advantage according to Michael Porter**

Many companies have employed methods and strategies, creating a defensive position to face competitive forces of competition in order to obtain a higher income. Porter (2004) argues that, among several distinct methods that companies have discovered, the best strategy to be applied is ultimately a unique construct that reflects their particular circumstances.

Generic competitive strategies are used to outperform competition. One can in some cases successfully use more than one strategy as its main focus, although this is rarely possible because each strategy is a different method for creating competitive advantage (Porter, 2004). Three generic competitive strategies are described below, showing the requirements of each one of them.

**Leadership in Total Cost:** From the conception of Porter (2004), it is the adoption of a set of basic policies to produce efficiently, reducing direct costs of production, control of indirect costs and minimize costs of sale, Advertising, among others. Despite the intense competition, the company's revenues will increase, and will be a protective measure against the influence of powerful buyers, who could exert a power to lower prices, and also against suppliers, without suffering the raw material.

**Differentiation:** According to Porter (2004), this strategy consists in creating a product considered unique, that has a differential before others. It can range from brand image, technology, customer service or chain of distributors. It creates a protection against competitors' rivalry due to the loyalty of customers to the brand, having less sensitivity on the part of the customers as to the final price of the product. This loyalty is a form of entry barrier for new entrants.

Approach: According to Porter (2004), it means focusing on a particular group of potential customers, on a particular line or in a particular location. This strategy aims to achieve a particular goal, and can achieve higher-than-expected returns due to market segmentation. Objectives can be achieved that are less vulnerable to possible substitute products such as working with differentiation, or the focus may be given because of the low cost.

### Risks of the Three Strategies

Among the risks of cost leadership can be highlighted the technological changes that force the company to reinvest in technology and eliminate obsolescence. Cost inflation ends up narrowing the company's ability to maintain a price differential. A classic example cited by Porter (2004) is that of the Ford automaker in the year 1920. At that time, the automaker produced a single car model, and thereby minimized production costs until other industries emerged, and the public started to want cars of other models and features, even being willing to pay more for it. Ford had to readjust itself, and this required higher costs. Kotler (2000) argues that companies that fail to develop new products are at great risk because they highlight the vulnerability of products to technological innovations, changing consumer preferences and reduced product lifecycles.

According to Porter (2004), the differentiation strategy may risk the consumer's preference for competitors' products for a lower price, even if they have to give up some characteristics of the differentiated product, in addition to imitations that are approaching more the industry as it matures. According to Tweed (1998), one can achieve the differentiation by the perception of the quality and the superiority of the product by the consumer. In this scenario, the risk of ignoring costs can make the competitor with a price differential, which serves the cost-sensitive consumer, has a good chance of standing out in the market.

According to Porter (2004), the risks of the focus strategy may be the cost of serving a particular segment being greater than that of the companies that are not focused, and the cost and product differentials of the competitors, in addition to the subdivisions that take place within the same segment, taking the company's strategy of focus.

In order to consolidate the theoretical framework, Table 1 summarizes the studies that addressed themes similar to the one proposed in this study, relating sustainability with competitive advantage:

Table 1: Synthesis of area studies

Author / year	Article title	Research Objective	Method Used	Main Contributions
LOPES/ 2011	Sustainable Competitiveness in the Port Activity of São Sebastião – SP	To investigate whether the implementation of environmental management contributes to the competitiveness of port activity.	Bibliographic research and case study.	It allows to understand that the sum of the experiences, knowledge and functions in relation to the port activity, culminate in the attendance to the sustainable competitiveness.
KITZMANN, D.; ASMUS.	Environmental Port Man-	Present examples of eco innovations and	Bibliographic research	It has been demonstrated that technological solu-



M./ 2006	agement: Challenges and Possibilities	environmental management practices in European and North American ports.		tions are being developed that reduce the environmental impacts of the maritime and port sector. And the public and private sector will have to adapt to them, which will require profound managerial, administrative and economic adjustments.
SANTOS Jr, J. E.; OLAVE, M. E. L. / 2014	Environmental Management and its Economic Benefits: A Case Study at the Dairy Processing Plant Santa Maria Ltda.	Identify and analyze the economic benefits achieved with the implementation of Environmental Management in the dairy company Santa Maria Ltda.	Descriptive research and case study (interviews)	It was verified that there is concern in the organization with the environmental issue and that actions are developed seeking to combine economic growth with the minimization of environmental impacts. This allows for competitive advantages, be they of an economic character, of improving the image and the opening of the foreign market.
MELLO, V. S. / 2010	Competitive Advantages of Environmental Management	Present the competitive advantages of environmental management in the broad sense	Bibliographic research	The importance of environmental management, as a cost control tool, was also evidenced as a means of obtaining financial advantages from the market. A paradigm shift towards an integrated environmental accounting model that encompasses economic, operational, environmental and social movements.
BOSCHETTI, F. A.; BACARJI, A. G. / 2009	Environmental Management Tools: A Tool for Competitiveness	Relate different approaches to environmental management tools as tools for market competitiveness	Bibliographic research	There was a change in organizational behavior since it was shown that it is possible to achieve profitability and protect the environment. These elements, together, can transform environmental constraints and threats into business opportunities, and are now a field to be explored.
SCHNEIDER, A. <i>et al</i> / 2016.	Sustainability and opportunities for the paper industry in Latin America.	Investigate whether the Brazilian paper industry has technical conditions, sustainable production practices and favorable market conditions to become one of the leaders in paper supply in the emerging Latin	Exploratory, documentary and bibliographic research	It was concluded that Brazil has great potential to be among the main suppliers of paper in the Latin American consumer market, confirming the hypothesis addressed by the article. The research suggests a broader and deeper study on the creation of a green seal that

		American market.		will protect Brazilian industry's good practices in paper production.
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Source: Prepared by the authors (2017)

## Methodology

The methodology includes descriptive and qualitative research, surrounding the sustainability and competitiveness constructs, from the perspective of a case study in the Port Terminal of Ponta do Félix, located in the city of Antonina, state of Paraná. Data collection was carried out through the use of the semistructured interview technique with the commercial manager and the environmental manager of the Terminal. In addition, a document with information related to the sustainable behavior of the investigated company was also analyzed, making possible the triangulation procedure of the data collected.

The interviews aimed to verify the procedures adopted by the company, involving improvements in the efficiency of operations and preservation of the environment, and their possible interference to obtain a competitive advantage, and a satisfactory market position. Following a methodological script, the interviews were recorded and transcribed in the literal form, totaling 14 transcribed pages. Thus, the content analysis of the interview conducted, as well as the document drawn up, was carried out.

After the data collection procedures, content analysis was performed following the recommendations of Bardin (2006). The author proposes to organize the analysis of content through three phases: 1 - Preanalysis, which means organizing the material to be analyzed, systematizing the initial ideas; 2 - Exploitation of Material, which is the codification, creating the codes, then creating the categories, referring to the literature used and inserting the codes in the respective categories. Finally, creating the networks and inserting the categories in the respective networks; 3 - The treatment of results: inference and interpretation, which means to condense and highlight information for analysis (BARDIN, 2006). For the coding and creation of the categories and networks, the software Atlas.ti version 8.0 was used. Based on the literature, 40 codes were identified and distributed in the following six categories: three categories related to Michael Porter's Generic Competitive Strategies: (i) Leadership in Total Cost, (ii) Differentiation and (iii) Focus, and three related categories To the three pillars of sustainability (Triple Bottom Line), Elkington (2012): (i) Economic, (ii) Social and (iii) Environmental. Finally, two networks were structured: Sustainability and Competitiveness.

Table 2 below presents the constitutive definitions of the categories of analysis:

Table 2 - Constitutive definition of categories of analysis

Category	Constitutive Definition
Porter's Generic Competitive Strategies	
Cost Leadership	Take advantage of competitors in offering products and services at lower costs. It is a defense strategy, since it causes the company in this situation to be in a favorable position in relation to the substitute products of the competition, guarding against any increase in the price of raw materials (PORTER, 2004).



Differentiation	The products and services offered by the company are considered unique, and there is a differentiation that justifies offering them at higher prices. It provides a defense strategy against competition, due to the loyalty of consumers to the brand, making them less price sensitive, gaining loyalty from their customers and a barrier to entry for new competitors (Porter, 2004).
Focus	Have a particular group of leads, targeting a segment or a geographic location. It can serve this segment more efficiently than competitors who adopt a broader market. As a consequence, the company specializes and the final price tends to fall (PORTER, 2004).
<b><i>Triple Bottom Line – Elkington (2012)</i></b>	
Economic	It concerns the financial results of the organization. Obtaining profits for shareholders, reducing risks, valuing stocks and generating jobs (BARBIERI et al, 2009; ELKINGTON, 2012).
Social	It involves social welfare issues, especially in meeting social demands, such as reducing inequalities, creating respect and involvement of workers, partners and the community in organizations (Elkington, 2012). A set of actions aimed at promoting the valorization of human rights, combating corruption and non-discrimination at work (BARBIERI et al, 2009).
Environmental	Set of actions to reduce the use of materials and energy, reduce the emission of pollutants, replace toxic components, reuse and recovery of materials. (BARBIERI et al, 2009). This provides goods and services at competitive prices, which at the same time bring customer satisfaction and contribute to reducing environmental impacts (Elkington, 2012).

Fonte: Research data (2017)

### Discussion of Results

The Port Terminal of Ponta do Félix, located in the city of Antonina on the coast of the State of Paraná, is the result of a public tender held in 1994. Since then, environmental licenses have been obtained and infrastructure works have been carried out on the quay, warehouses And excavation of the access channel, which allowed the beginning of its activities in the year 2000. Today it has 08 warehouses with load capacity for 18,000 m<sup>3</sup>, patio for 2,300 containers, 02 refrigerated rooms and patio with 192 receptacles for reefer containers. The whole terminal is bonded and has permanent inspection of the Ministry of Agriculture through the Federal Inspection System. The loading and unloading operations operate 24 hours a day and 7 days a week. It is authorized to work with all types of cargo. It currently imports fertilizers and exports soybean meal, GMO Free soy, sugar in sacks, ores and petroleum coke. Currently the terminal has not been working with frozen cargo. Until the year 2009, when the company belonged to another group, it moved the frozen ones only by break bulk, it did not embark cargo in container reefer, because the ships of container at the time did not dock because of the lack of the dredging. From 2011, when the dredging was done, the Terminal began to receive ships direct from Russia, due to the draft being propitious for mooring.

With the intention of verifying how the sustainable actions of the company interfere in obtaining a competitive advantage, the following data are presented, analyzing all its actions that contribute to obtain the best position in the market, as well as in the development Development in the region.

In order to demonstrate how Michael Porter's generic competitive strategies apply, the Competitiveness - Michael Porter network was created in the Atlas.ti soft-

ware, showing the codifications carried out in the respective categories: Differentiation, Focus and Leadership in Total Cost, as shown in Figure 01.

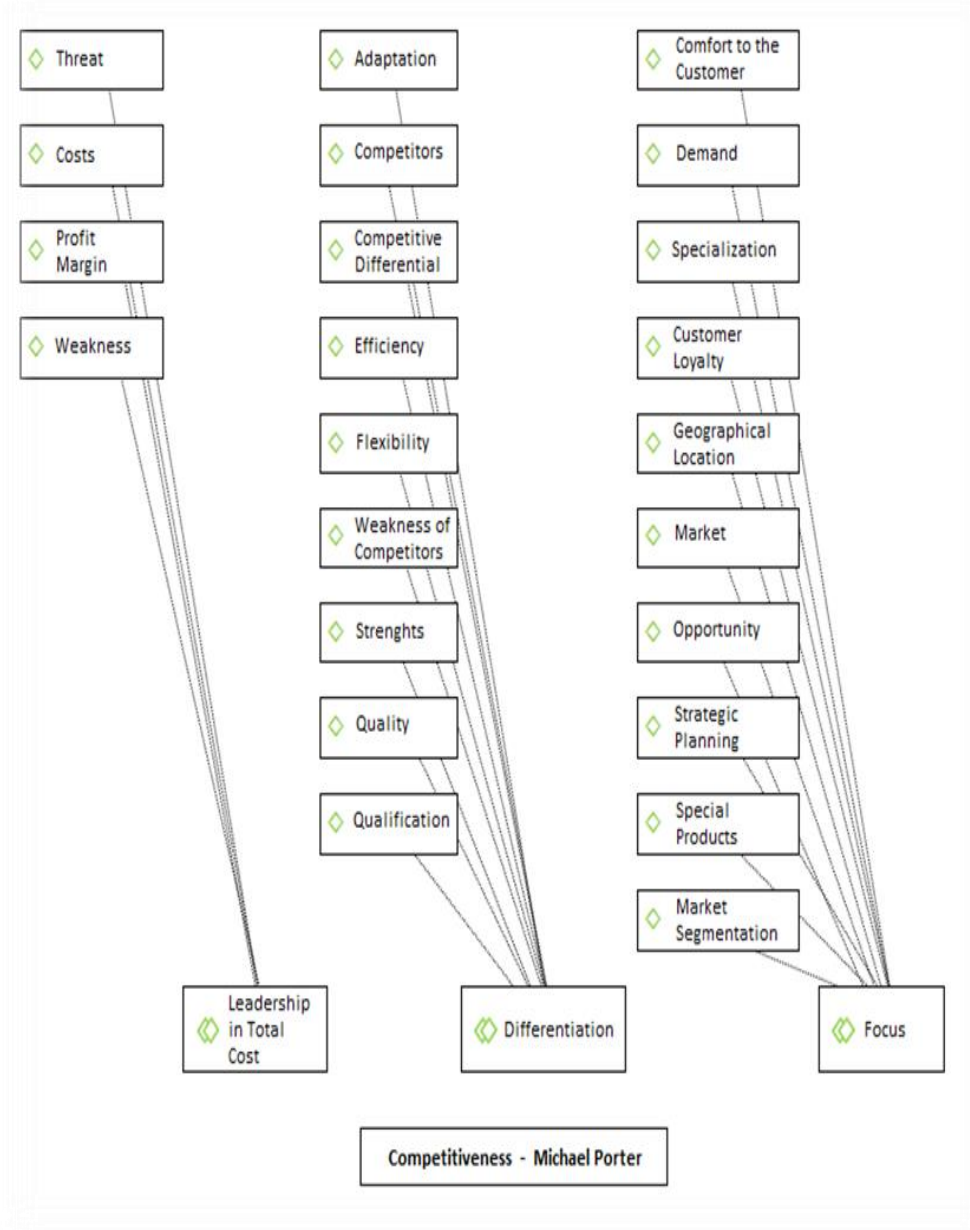


Figure 01: Competitiveness profile of Michael Porter  
 Source: Research data (2017)

As shown in the codifications, the strategy of differentiation adopted by the organization has been conducted in such a way as to promote an adaptation to the changes in the international market, especially to the competitive pressure that has been adjusting and gaining market as it specializes in one Segment. The competitive differential of the terminal can be said that, in addition to complying with environmental legislation, it has performed more than is required, in order to meet certain market niches, that in some ports, such as Paranaguá and Santos (competing ports), has shown weakness in this aspect, being unfeasible both in technology and economically, if they enter this same segment. All the procedures with respect to these prod-

ucts have been adopted with the greatest efficiency and flexibility, in a way that maintains the same quality of the product for the final consumer. The Ponta do Félix Terminal is considered unique as a specialized terminal, regarding the provision of differentiated service, adopting standards beyond those imposed by environmental agencies (municipal, state and federal), and aimed at customers who demand the final product with quality And with less sensitivity as to the final price. This aspect is one of the strengths of the company that reflects how it differentiates itself in the market. Although the Terminal presents a higher cost per ton to move, through the use of crane instead of conveyor belts, the Terminal can present a specialized service, in a small scale, adopting a set of procedures so that the risk of contamination of the product Is zero. For that, it has counted on the constant qualification of its collaborators.

The focus strategy focuses on the company's specialization in moving special products, whose market must be more flexible to meet certain niches. The environmental department devotes itself considerably to environmental issues and routine obligations in order to strictly follow the obligations to operate and move the products to the required standards. The terminal has GMP (Good Manufacturing Practice) Certification, referring to Good Manufacturing Practices, being mandatory requirement to be able to carry out the soybean meal of the type SPC (Super Protein Concentrate), concentrated soy protein, destined for Salmon producers on the European market.

Another special product is GMO FREE soy, which is not genetically modified and requires no contamination. This demand can not be met in the export corridor of the Port of Paranaguá (the largest bulk carrier in Latin America) whose risk of contamination is higher. It is a segment that requires a specialized service. Due to this factor, customers choose to move around the Ponta do Félix Terminal, due to the fact that the product to be delivered to the final consumer preserves the same characteristics of origin, and this has generated customer loyalty, which will continue to export its cargo through Antonina. Another product is the petroleum coke of the Petrobrás de Araucária Refinery. Its movement requires a series of extremely strict environmental demands. The very structure of the Port of Paranaguá (closest to that of Antonina) makes it economically unfeasible to move the coke. For this demand, the Ponta do Félix Terminal has all the support and follows all mandatory environmental standards. The coke produced at the Cajati Mineral Chemical Complex in the state of São Paulo is exported by the Terminal, with a monthly demand of approximately 30,000 tons, which is economically unviable for the Port of Santos. The inefficiency of other ports, especially large bulk exporters, in operating in this specialized segment, can be considered as an opportunity for the Ponta do Félix Terminal to gain market space in this segment. Due to its specialization in moving special products and its geographical location, its area of coverage has extended from the state of Paraná, São Paulo, to the state of Mato Grosso.

In the movement of fertilizers, the terminal has a structure and a series of equipment that increases efficiency and quality, so that when accommodating the product, it ensures that it maintains the same characteristics and the same granulometry from which it originated, not Running the risk of possible changes in the product itself, occurring in the handling of conveyor belts.

The attractiveness of moving in the Ponta do Félix Terminal, as well as the quality of the delivery of the product, is also enhanced by the fact that there is no queue to dock the ship. While in the port of Paranaguá the ships can stay up to 60 days waiting to dock, in Antonina the ship carries out the docking process immediately, avoiding losses that could reach six million dollars by waiting time for mooring. This provides comfort to the customer, as he knows that his cargo will not be waiting for and this will incur additional expenses resulting from a possible waiting time for berthing. Its infrastructure is still deficient in order to handle a greater volume of cargo, which requires strategic planning so that it can serve a particular customer at a certain time of the year, always maintaining a high warehouse occupancy rate.

As for the cost strategy, the Terminal is characterized by its integration and business generation center, with the purpose of making possible a reduced freight cost, because the carrier that brings a product like soybean meal, for example, to Export by Antonina, to be able to return with fertilizer, increasing the attractiveness of the Terminal. Perhaps your profit margin is not greater because you do not have the structure to move large volumes, like the bulk transported on the conveyors of the Export Corridor. Although the company is able to serve certain markets, which require specialized services, the structure to meet a larger volume is still inefficient, characterizing a weakness of the company, lack of more warehouses and a railroad. A rival terminal that specializes in the same segment as Antonina, and has a larger infrastructure at its disposal, constitutes a threat to the Terminal of Ponta do Félix, for achieving a lower cost of freight and storage.

The best strategy applied, looking at the premises of Michael Porter, as the main focus in Terminal activities is the differentiation, since the competitive advantage has been concentrated in relation to the competitors terminals, highlighting in market share. The same success the company has managed to adopt, along with the differentiation, the strategy of focus, because the Terminal concentrates on certain segments. The category that presented a tenuous highlight was the leadership in the total cost, precisely because it does not have an infrastructure to move and store a larger volume of assets, and does not have a railroad line, which makes the shipment per ton in competing terminals with Structure can enable a lower freight price.

In order to achieve the objective of this study, the analysis was also carried out under the perspective of sustainability, so that the network called Sustainability (according to John Elkington's premises) was created from the software Atlas ti, so that it is possible to demonstrate the Three aspects, ie, economic, social and environmental (Triple Bottom Line). It is possible to verify in Figure 02 their respective codifications constituted in the categories of analysis, shown next.

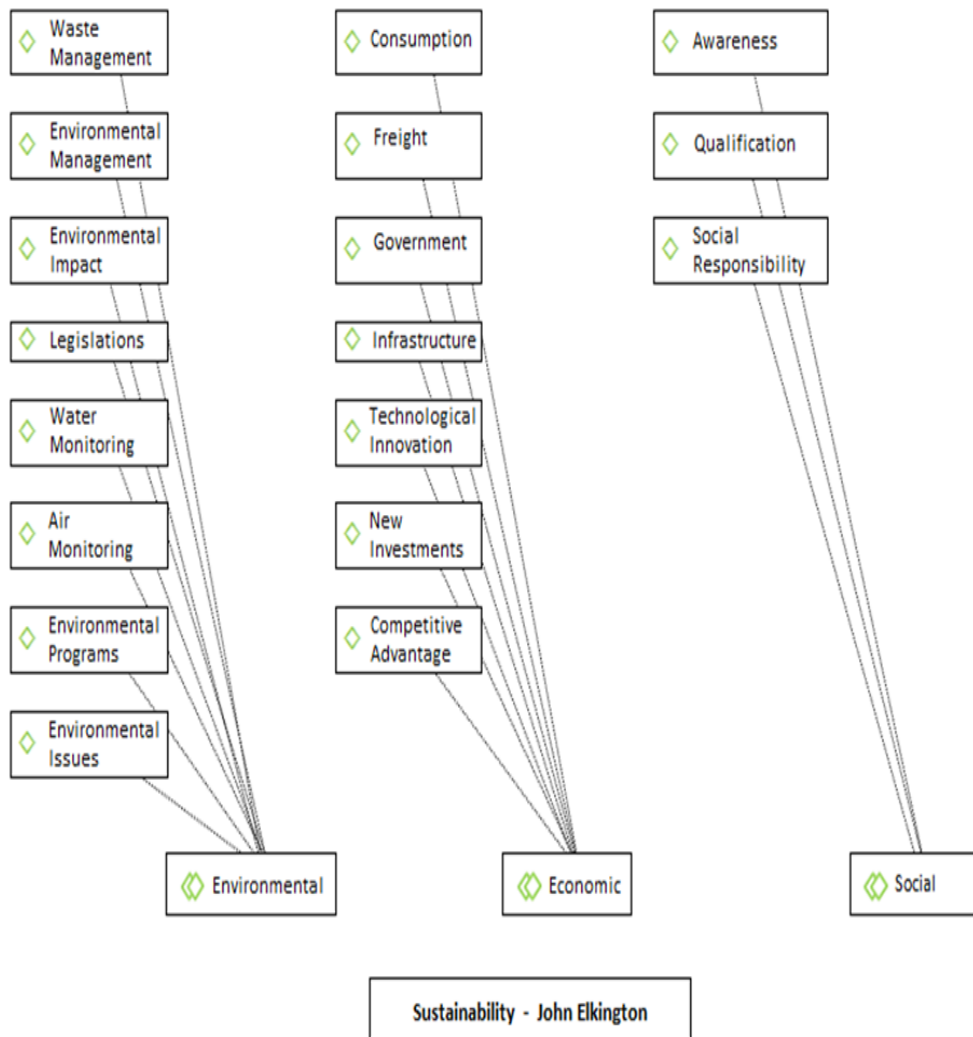


Figure 02: Sustainable features (*Triple Bottom Line*)

Source: Research data (2017)

In the Environmental aspect, the Terminal complies with all pertinent federal, state and municipal environmental legislations for the full operationalization of the port activity. It has a previous license for the installation of a new solid bulk warehouse, with prospects of increasing storage capacity and for expanding one more berth.

Surveys of environmental aspects and impacts are constantly carried out, in order to obtain forecasts of future environmental impacts and their corrective measures. As demonstrated in the audit report, held in December 2016, and through information from the interview with the person in charge of the environment, the company maintains environmental programs related to socio-environmental education, water monitoring, air monitoring and Waste. Most of the Environmental category encodings refer to the environmental programs carried out by the company, as shown in Table 3 below.

Table 3: Synthesis of the Terminal Audit Report (2017)

Programs	Description
Social and environmental education	Actions against dengue: cleaning the terminal, training, blitz with truck drivers and distribution of posters in local commerce.
	D-day of Dengue.
	Continuous and conscious small actions to reduce the amount of materials released in the environment and the consumption of electric energy; Training on waste, selective collection, operational procedures aiming at the conservation of the environment, organization and cleaning.
	Mango cleaning in areas adjacent to the terminal: Performed monthly; Raise awareness and introduce employees to environmental issues.
Noise	Control and monitoring of noise, according to resolution of CONAMA 01/90 (industrial zone).
Zoonoses	Control of rodents, cockroaches and pests; Dengue fever - The larvae of <i>Aedes aegypti</i> ; Inspections and loading of traps (monthly).
Solid waste management	Last revision of the Solid Waste Management Plan was carried out in May 2015.
Effluents and water quality	<p>Quarterly monitoring of bay water and effluents. In the event of any change occurring, the monitoring team checks the source of the problem:</p> <p>09 effluent points:</p> <ul style="list-style-type: none"> <li>• Raw sewage and treaty of the refectory;</li> <li>• Raw sewage e chamber treaty;</li> <li>• Raw sewage e concierge treaty;</li> <li>• Raw sewage e treatment of bulk administration treatment system;</li> <li>• Treated effluent from the car wash system.</li> </ul> <p>05 points for monitoring water quality along the bay.</p> <ul style="list-style-type: none"> <li>• Trapiche, Barão de Teffé, Ponta da Pita, Ponta do Félix e Nhundiaquara.</li> </ul>
<u>Ballast Water Monitoring</u>	<p>Prevent ballast water bioinvasion of ships that dock at the Terminal, through:</p> <ul style="list-style-type: none"> <li>• Documentary control of the oceanic exchange (IMO recommendation);</li> <li>• Sampling performed on vessels moored to verify salinity;</li> <li>• Environmental education with ship's commanders and port communities.</li> </ul>
Junco Project	The sewage treatment system consists of septic tank for retention of solids and root zone tank for the treatment of liquid effluents, presents itself as a solution of low cost, little maintenance and great efficiency.
Atmospheric emissions	Control and monitoring of the emissions (black smoke) of the equipment and trucks of the cooperative that work in the Terminal, avoiding the waste of the products, as well as, reducing the pollution. Performed quarterly.
Energy Efficiency Program	<p>The sending of information by e-mail on the rational use of electric energy;</p> <p>Adoption of an operational measure to reduce energy consumption:</p> <ul style="list-style-type: none"> <li>• Inflatable warehouses, when not in use, are kept off;</li> <li>• Performed daily checklist to check the lighting shutdown of warehouses in masonry.</li> </ul>
Reuse Water Program	Use of rainwater for cleaning of external areas, fire fighting system and ramp washing machines and equipment. Capacity of 200,000 liters of water for reuse.
Risks and emergencies	<p>In progress at IBAMA under protocol no. 02001.002220 / 2016-69:</p> <ul style="list-style-type: none"> <li>• EAR (Risk Analysis Study)</li> </ul>



	<ul style="list-style-type: none"> <li>• PGR (Risk Management Program)</li> <li>• PAE (Emergency Action Plan)</li> <li>• PEI (Individual Emergency Plan)</li> </ul> PAE, PEI, WFP (Mutual Assistance Plan) and Area Plan training; Rescue simulation on board; SIPAT (Internal Week of Prevention of Accidents at Work).
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Source: Elaborated by the authors from the research data (2017)

In the Social category, the codifications indicate that these environmental programs have been highlighting the company's social responsibility. As pointed out by the company's environment manager, the lack of water in the municipality of Antonina is constantly occurring. Through the Reuse Water Program, the consumption of water in the terminal decreases, causing less impact to the community, regarding lack of water.

The employees of the Terminal receive courses and training to carry out the environmental programs. The company counts on these duly qualified professionals, so that actions are taken both with employees and with the community, promoting awareness of sustainability, as well as compensatory and mitigating actions carried out periodically by the company. In addition, actions are taken to preserve and adapt operations, in order to promote sustainable development involving all organizational levels.

In the Economic aspect, it can be said that among the sustainable actions carried out by the company, the Reuse Water Program and the Energy Efficiency Program promote the reduction of consumption of drinking water and electricity and bring considerable benefits to the company's costs. The redesign of web management software, approved by the IRS, brought technological innovation to the Terminal. Works with pre-scheduling of trucks. The vehicle, which took two minutes to weigh, began to perform the same service in thirty seconds. There is a gain in productivity, because in addition to generating savings of material resources, being all automated minimizing paper consumption, brought greater agility for each truck that arrives at the terminal to complete the loading. The duration of the event, which previously consisted of an hour and a half, was reduced to twenty-five minutes.

Infrastructure works are needed to address the shortcomings pointed out by the company, such as the construction of new warehouses and the third berth of berthing, to increase the capacity of the terminal. Public works are also required to improve access to the terminal, such as a railway branch with access to the terminal and a new highway, linking the Ponta do Félix Terminal direct to BR 277 without having to go through Morretes. Currently the railroad only arrives until the Port Barão de Teffé, public port in Antonina, belonging to APPA (Administration of Ports of Paranaguá and Antonina). For the construction of the highway, which is the responsibility of the State Government, the EIA-RIMA and the public hearings were done. During 01 (a) year several projects were elaborated, and the analysis of lesser environmental and financial impact, corresponding to a road stretch with a length of 12.53 km, prevailed. These new investments, which after being executed, will provide great savings in freight, for using the rail mode for bulk transportation, reducing the environmental impact caused by trucks passing in the middle of the cities of Morretes and Antonina, and with the new highway, the cost Of road freight will decrease considerably, and will increase the degree of attractiveness of the terminal, especially

for vehicles transiting between Paranaguá and Antonina. The dredging of the access channel, an investment that requires attention to environmental issues, allows bigger ships to come to Antonina, as has already occurred after dredging previously, which allowed the Terminal to receive ships direct from Russia to unload. Investments such as these increase the attractiveness, thereby gaining competitive advantage over other ports.

The result of the research shows that the company has a competitive advantage by adapting to environmental standards. According to Mello (2010), companies with sustainable attitudes place greater credibility in the face of the market. By combining the codifications carried out in the Sustainability and Competitiveness networks, the studies of Porter and Linde (1995) can be confirmed, showing that the competitive advantage is achieved due to investments in environmental management and technology, reducing costs and increasing the productivity and efficiency in the operations, besides the strategies carried out to concentrate in a certain market niche. The "Porter Hypothesis", in comparison with the research carried out, confirms the terminal gains in several aspects, due to its adaptability to be able to sustain itself in a competitive market and of great environmental impacts, in this case, the port terminals.

### **Final considerations**

The objective of this work was to analyze how the sustainable actions are related to the port competitive advantage, as well as the best market positioning and its respective regional socio-environmental development. From the information collected in the interviews, and later through the content analysis according to the guidelines of Bardin (2006), it was demonstrated that the investigated company has implemented, with respect to sustainable practices, beyond what is required in environmental laws To work. According to authors Porter and Van Der Linde (1995), investments in environmental management and technological innovation make the company a competitive advantage, avoiding waste and increasing productivity and efficiency in its operations.

Due attention to environmental issues has been differential for the company. The Terminal has quality certification, which allows the shipment of bulks that do not admit contamination. The service of this Terminal presents itself as a highlight in its competitive strategies, especially the one of differentiation and of approach - according to Porter (2004) - being the company inserted in certain niches of market, that in ports of great movement of bulk, as of Paranaguá And Santos, it becomes unfeasible to move, due to both the small demand and the set of procedures required for a particular type of product.

In addition to meeting certain demands, what has increased the attractiveness to the Terminal is the set of procedures, which makes the loading and unloading of trucks become more agile and that berthing of ships at Antonina occurs immediately. In addition, environmental programs have been carried out by the company, as demonstrated by an audit report conducted in December 2016, which shows, for example, noise control, zoonoses, solid waste management, bay water quality monitoring and water monitoring, ballast. Socio-environmental education programs have been carried out, such as dengue control and mangrove cleaning.

This study contributes to demonstrate that environmental regulation by companies can cause them to gain competitive advantage and opportunities for improvement, attracting new business. According to Kitzmann and Asmus (2006), the segments, especially those that cause greater environmental impact, such as ports, by maintaining awareness of the importance of environmental adequacy, and even offering something more, have more advantages over others, by reducing costs and impacts, and by attracting and maintaining certain cargoes that require more stringent environmental demands.

The findings of this research are corroborated by a case study carried out by Lopes (2011), which investigated the activities of the Port of São Sebastião, and shows the good results in meeting social, environmental, economic, ecological, cultural, territorial and environmental demands. Policies. According to Porter and Linde (1995), in his "Porter Hypothesis", and also studies already done in the academic community on the subject, following environmental norms is not a burden, but a situation in which Economic growth, environmental preservation and quality of life, ensuring that present and future generations can meet their needs.

Despite the findings of this study, which in a structured way bring contributions to the scientific literature and to the, it is suggested specifically regarding the port region of the state of Paraná, the realization of new researches, with the collection of secondary data and the use of techniques Quantitative statistics, especially concerning the competitiveness of sustainable ports, in view of the port vocation of the two neighboring cities, Paranaguá and Antonina, for over a century.

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