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SUBJECT AREA: ORGANIZATIONAL STRATEGY AND BEHAVIOR

## Sustainable Strategies and Export Performance: an analysis of companies in the gems and jewelry industry

*Estratégias de Negócios Sustentáveis e Desempenho Exportador: uma análise em empresas do setor de gemas e joias*

*Estrategias Empresariales Sostenibles y Desempeño Exportador: un análisis de las empresas del sector de gemas y joyas*

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### ABSTRACT

This study had the aim of analyzing the relation between the use of sustainable management strategies and the export performance in manufacturing companies of the gems and jewelry industry. Sustainable strategies were analyzed from the adaptation of the strategic model of the American Battelle Institute, introduced by Placet, Anderson and Fowler (2005), which addresses the interaction of economic, social and environmental aspects with the perspective of innovation, and impacts on the company and on the society. The export performance was analyzed based on

the adaptation of the model of Papadopoulos and Martín (2010), which develops and tests a formative measure of the export performance, and identifies and quantifies the relative contribution of its consequences to the economic and strategic dimensions. The research is characterized as descriptive and quantitative, and was conducted through a survey. Therefore, it was highlighted that the sustainability dimensions are related to the export performance of companies in the gems and jewelry industry. Thus, it was suggested that sustainable business strategies can substantially contribute to the export performance, through

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the guidance towards economic, social and environmental results to the organization and its stakeholders.

**Keywords:** Sustainable strategies. Export performance. Gems and jewelry industry.

## RESUMO

Este estudo teve como objetivo analisar a relação entre a adoção de estratégias de gestão sustentável e o desempenho exportador em empresas industriais do setor de gemas e joias. As estratégias sustentáveis foram analisadas a partir da adaptação do modelo estratégico do Instituto Americano Battelle, apresentado por Placet, Anderson e Fowler (2005), que aborda a interação dos aspectos econômico, social e ambiental com a perspectiva de inovação e reflexos na empresa e na sociedade. O desempenho exportador foi analisado com base na adaptação do modelo de Papadopoulos e Martín (2010), que desenvolve e testa uma medida formativa do desempenho exportador e identifica e quantifica a contribuição relativa das suas consequências nas dimensões econômica e estratégica. A pesquisa caracteriza-se como descritiva e quantitativa, e foi conduzida por meio de um *survey*. Sendo assim, evidenciou-se que as dimensões da sustentabilidade estão relacionadas com o desempenho exportador das empresas do setor de gemas e joias. Dessa forma, ficou sugerido que estratégias de negócios sustentáveis podem contribuir substancialmente para o desempenho exportador, por meio da orientação para resultados econômicos, sociais e ambientais à organização e a seus *stakeholders*.

**Palavras-chave:** Estratégias sustentáveis. Desempenho exportador. Setor de gemas e joias. Estratégias sustentáveis. Desempenho exportador. Setor de gemas e joias.

## RESUMEN

El objetivo de este estudio es analizar la relación entre la adopción de estrategias de gestión sostenible y el rendimiento en el sector industrial de gemas y joyas. Las estrategias sostenibles fueron analizadas a partir de la adaptación del

modelo estratégico del Instituto Americano Battelle, hecho por Placet, Anderson y Fowler (2005), que aborda la interacción económica, social y medioambiental, con la perspectiva de la innovación y los reflejos en la empresa y la sociedad. El desempeño de las exportaciones fue analizada en base a la adaptación del modelo de Papadopoulos y Martín (2010), que desarrolla y pone a prueba una medida formativa de las exportaciones e identifica y cuantifica la contribución relativa de sus consecuencias en el ámbito económico y estratégico. La búsqueda caracterizada como descriptiva y cuantitativa se llevó a cabo por medio de una encuesta. Era evidente que las dimensiones de la sostenibilidad están relacionados con el desempeño de las exportaciones de las empresas de piedras preciosas y joyas, lo que sugiere que las estrategias de negocio sostenibles pueden contribuir substancialmente a los resultados de exportación, a través de los resultados orientados hacia el desarrollo económico, social y medioambiental de la organización y de sus grupos de interés.

**Palabras clave:** Estrategias sostenibles. Desempeño exportador. Sector de gemas y joyas.

## 1 INTRODUCTION

The creation of a sustainable business model for developing countries is one of the main business challenges of the millennium: how to innovate in a sustainable way and expand the competitiveness in global markets, meeting the requirements of such market? Under such circumstances, environmental changes have created new requirements and conditions for the industrial activity, so that the adoption of sustainable business strategies aiming at the reduction of socio-environmental impacts of products and processes represents a competitive edge for the companies. On the other hand, the performance in international markets also represents an aspect directly related to the business competitiveness.

Confirming these assumptions, Pasqualotto and Ugalde (2010) highlight that the demands on the organizations to adopt a responsible attitude in regard to sustainability are increasingly recurrent in the business environment, in addition to the increasing challenges regarding the adaptation of products for internationalization purposes.

Companies walk towards a policy of higher socio-environmental responsibility (SER), considering that they have the power to answer, before all the stakeholders, for impacts or damages caused to men and the natural ecosystems, caused by their acts, processes and products, introduced in the public environment (UNITED NATIONS, 2006). Therefore, in order to ensure competitiveness, companies need to develop a sustainable model with the adoption of management practices that ensure the expansion of the innovation capacity and the performance abroad.

According to information from the Brazilian Institute of Gems and Precious Metals (IBGM), the gems and jewelry industry had an expressive increase in regard to its share in Brazilian exports, from 27%, in 2005, to 39%, in 2010. Such growth was influenced by strategies supported by the Integrated Sectorial Program of Support to Exportations (PSI), created in 1997 by IBGM/Apex-Brazil. The actions promoted by IBGM/Apex, in addition to general favorable impacts in terms of the country's and the industry's image as a whole, is also increasing the Brazilian exporting base in a permanent way, which is key for the generation of jobs and income (BELLINI, WERNECK, 2012).

Gem is a mineral, rock or petrified material that, when lapidated or polished, is collectable or usable as a personal ornament in jewelry. For the jewelry industry, gems are classified as stones or gems that are: precious, ornamental or synthetic. The industry regards the jewel as the product intended for personal ornament and manufactured using gems and/or precious metals alloys, such as gold, silver and platinum. All of them are called jewels, and can be made of precious metals (silver, gold, platinum, palladium), plated jewels (common metals plated

with silver; common metals or silver plated with gold; common metals, silver or gold, plated with platinum), and it doesn't matter whether they have or not natural or synthetic stones (HENRIQUES, SOARES, 2005).

The representativeness of the gems and jewelry industry in the whole Brazilian exports, as well as the importance of adopting sustainable strategies in the competitiveness of the national industry, show the relevance of studies addressing such analysis dimensions. Therefore, the proposal of this work encompasses this industry as the study tool.

From these data and assumptions, the main objective of the study was elaborated, consisting of understanding the relation between the adoption of sustainable management strategies and the export performance of Brazilian companies manufacturing gems and jewels.

## 2 BUSINESS SUSTAINABILITY AND THE EXPORT PERFORMANCE

Socio-environmental demands are increasingly recurrent in the business sphere, which requires the adoption of sustainable business strategies, in order to ensure that resources are managed to prevent their lack in the future, and with the aim of minimizing the social and environmental impact resulting from productive activities. Consequently, the responsibility of organizations is not only associated to the obligation of producing goods and services, getting profits and creating jobs, but also to the effects of their decisions and actions on the whole social system (CARROLL, 1999; SCHWARTZ, CARROLL, 2003).

Thus, the competitive excellence of organizations is directly related to the sustainable management of resources encompassing the economic, social and environmental dimensions, while being oriented towards innovation.

Sustainable business strategies are usually based on the economic, social and environmental dimensions. Such dimensions are based on the Triple Bottom Line concept, developed by

Elkington (1998). To this author, within the environmental sphere, there is a highlight on the use of resources in order to prevent harming future generations, reducing the impacts of the actions of industries, and using natural resources in a sustainable way. Under the economic perspective, there is the preservation of the organization profits, and the non jeopardizing of the economic development. At last, within the social sphere, there is the inclusion of the social justice issue, to which the major aim is to develop of a fairer world, through relations with all the stakeholders.

Sustainability consists of a complex, multidimensional concept, which cannot be equated by means of a single corporate action. Therefore, the creation of the sustainable value, according to Hart and Milstein (2004), requires from companies to: a) reduce the levels of raw material consumption and pollution; b) operation with broader levels of transparency and responsibility; c) development of new and revolutionary technologies with potential to reduce men's footsteps on the planet; and d) fulfillment of the needs of people located in the lowest level of the world's income pyramid, facilitating the creation and distribution of inclusive income.

The American Battelle Institute has a strategy model for sustainability based on three pillars – economic, environmental and social. In the past 20 years, the institution is investing its research efforts not only in understanding the benefits of a business approach oriented towards the sustainability, but also in developing a leadership position in the practical application of sustainability principles (PLACET, ANDERSON, FOWLER, 2005).

Placet, Anderson and Fowler (2005) define a strategic model for sustainability that addresses the interaction of economic, social and environmental aspects, with the perspective of innovation, with reflexes on the company and on the society. The economic base aims to keep the undertaking with the generation of profit, meeting the interests of the stakeholders and providing development opportunities to the local community, through the creation of jobs. Social

strategies development bring out more attractive job opportunities, which means the improvement of life quality, better remuneration and the involvement of the society. However, for the company, it is possible to have more productive and loyal employees, with smaller number of complaints, and insertion of new products for the world development. Under such circumstances, strategies oriented towards the environmental and its natural resources preservation allows the easier implementation of new environmentally correct products, and the projection of a positive image of such companies.

Theoretically, the three pillars can be simultaneously attained. The development of a inclusive sustainability strategy, actually implementable, represents a challenge, and can be even received with skepticism by the organization. In a traditional management, the development of strategies focuses on the expansion of activities to create profits, and reducing dispensable expenditures. Environmental protection and social programs can be seen as expensive and unnecessary. However, the development of actions focused on environmental and social strategies can leverage the economic growth of the organization (PLACET, ANDERSON, FOWLER, 2005).

Studies conducted by Placet, Anderson and Fowler (2005) suggest that the strategy for sustainability should be customized for specific situations. Thus, it is important to attain feasible solutions encompassing the three sustainability pillars, requiring leaders to customize sustainable processes and products in specific regions and with specific raw material. Therefore, it might be necessary to transcend traditional internal and external limits to find innovative solutions to promote sustainability, involving in a multidisciplinary way laboratories, non-profit research organizations, other non-governmental organizations, and the industry.

To Lacy et al. (2010), sustainability issues in the strategies of organizations are important for the companies' businesses and for financial results, for when costs are reduced, production is done in a clean way, gas reduction process is improved, among others, there is a significant

advantage to the company, protecting its brand and reputation in the market. According to Lacy et al. (2010), sustainability is seen as one of the several elements in the strategies of companies to build up a reputation in the market. This commitment with sustainability present in the strategies of organizations is increasing and becoming indispensable to face the world economic crisis, which thus lead organizations to include environmental, social and economic issues in their corporate strategies.

Working in the international environment has been a strategy spread among various companies and economy industries of various scales, that see in the internationalization the way of attaining a considerable range of benefits. Thus, the exploration of new markets and the need to optimize resources and consolidate operations are variables pushing the construction of a company's operations abroad (DUNNING, 2000).

Internationalization theories are debated from two theoretical branches. The first branch has a behavioral focus, and considers the internationalization process as evolutionary and incremental; the second one has an economic focus, and assumes that the companies' risks resulting from the opportunistic behavior and from the limited rationality of economic agents are higher in the international market than in the domestic market.

Uppsala's internationalization model is at the core of the behavioral current, and sees internationalization as a process of gradual international involvement. Such process is developed from the interaction of the development of the knowledge about foreign markets, and operations and a increasing commitment of resources to the foreign markets (JOHANSON, VAHLNE, 1990). Based on the theoretical branch, the company first develops in the domestic market, and then the internationalization is the consequence of a series of incremental decisions. The main obstacles for the internationalization are the lack of knowledge and resources, and such incremental obstacles can be reduced by making decisions and having knowledge of

foreign markets and operations (JOHANSON, WIEDERSHEIM-PAUL, 1975).

The economic branch introduces the concept of the eclectic international production paradigm, publicly introduced in the article "The Eclectic Paradigm of International Production – a Restatement and Some Possible Extensions", also called OLI ("Ownership, Location, Internalization"), through which a *framework* is introduced in order to identify and evaluate factors influencing companies' decision of producing abroad and the growth of such production (DUNNING, 1988). The Eclectic Paradigm addresses the concepts of the transaction costs theory, focusing on factors influencing internationalization decisions, as features of products and markets, and how this affects the financial performance of organizations (DUNNING, 1988, 2000).

The determinants of the company activities abroad, based on the eclectic paradigm, might vary according to the country, to the industry and the corporate features, and are based on three different factors. The first factor refers to the specific competitive advantages of the company, which represent a differential in relation to the competitors. The second factor relates to the location advantages, i.e., the local attractive of a certain place for the international investment. At last, the third aspect refers to the internationalization advantages, which represents the company's propensity to combine its competitive advantage with the advantages of being located and producing abroad (DUNNING, 1988).

Under such circumstances, working in the international market represents a series of benefits for the companies, such as the reduction of the domestic market dependency, the compensation of possible market share losses, the increase of sales volume, and the obtainment of scale economies by producing with lower costs and having higher quality products at competitive prices (KLOTZLE, THOMÉ, 2006). Thus, the performance in the international market is regarded as an important aspect for those organizations willing to stand out beyond the domestic market, and to become more

competitive. Therefore, evaluating the results from activities abroad becomes relevant.

The exporting activity can be defined as the result of the company's international activity, and refers to a complex phenomenon, considering that it encompasses the analysis of multiple factors. To Katsikeas, Piercy and Loannidis (1996), the exporting performance refers to a multifaceted concept, and different exporting companies tend to set different performance goals, depending on the nature of their strategies. Also, according to the authors, structural differences among several foreign markets can influence performance.

The exporting performance construct was defined and measured in various different ways, since researchers are using different analysis units and periods of time. Companies also have different evaluation models and place different degrees of importance to the various export goals (DIAMANTOPOULOS, KAKKOS, 2007).

According to Katsikeas, Piercy and Loannidis (1996), two main ways of measuring the performance are identified in literature: an objective and a subjective way. Objective measures are based on absolute data, such as the company's profitability, sales volume, while subjective variables are related to the managers' perception of the exporting performance.

There are various models in the theoretical contribution with the purpose of measuring the exporting performance. Zou, Taylor and Osland (1998), when observing the lack of consensus regarding the main determinants of the exporting performance and the absence of a unified measure, propose the EXPERF scale in an attempt to develop an unifying measure which could be applied in several countries. The EXPERF scale is a subjective measure encompassing economic dimensions, strategic dimensions and the general satisfaction of exports (ZOU, TAYLOR, OSLAND, 1998).

To Papadopoulos and Martín (2010), there is a multiplicity of concepts and different measures for the exporting performance, because different researchers have been using different analysis units and periods for the development of their proposals. The authors have launched

a model to correlate the internationalization process and the exporting performance, from the conduction of a study with companies located in Spain, with the aim of analyzing the export performance within the internalization process context.

In the study by Papadopoulos and Martín (2010), the international experience is analyzed through longitudinal and transversal experiences, of the international commitment and internationalization levels, and of the export performance from the evaluation of a economic dimension (financial performance indicators) and an strategic dimension (measures through which the objectives of the company are attained). For the authors, the international experience affects the international commitments, and they in turn influence the internationalization level, which helps to improve the international experience, while influencing the export performance.

The analysis of empirical evidences of the study by Papadopoulos and Martín (2010) results in three key observations about the export performance, namely: The export performance can be defined as a formative construct, with an economic and a strategic dimension, since both dimensions are seen as the cause, and not the result of the export performance; 2) the contribution of the economic dimension is bigger than of the strategic dimension, showing a general trend of companies in focusing on short term objectives which can be measured with "concrete data", in detriment of long term strategic objectives, which are also more difficult to measure; and 3) the conceptualization of the economic dimension is formative, since the study has evidenced that sales in the international market and profitability are not necessarily correlated. The measure includes both the economic performance aspects, i.e., effectiveness (sales) and efficiency (profitability), and also shows a significant and very similar contribution of both indicators for the formation of the economic performance (PAPADOPOULOS, MARTÍN, 2010).

According to Schaltegger and Synnestvedt (2002), the relation between the environmental and the economic performances is been debated

in the past few years, and the results show two different points of view. The first branch defends that the improvement of environmental performance results in additional costs to companies and therefore reduces profitability. The other perspective emphasizes that the better environmental performance allows the reduction of costs and the increase of sales, and thus allows to improve the economic performance.

In the view of Schaltegger and Synnestvedt (2002), the economic performance is influenced not only at the environmental performance level, but mainly by the type of environmental management. Thus, the authors defend that to understand and measure the connections between environmental performance and economic success it is fundamental to analyze the environmental management quality and the actions adopted in order to improve the environmental performance.

In relation to this, Hrdlicka (2009) highlights the emergency and importance of the topics of sustainability and internationalization, in view of the positive evolution of the Brazilian exports performance in the past few years, in various economic sectors, and the increasing concerns regarding the planet sustainability within the business sphere.

To Christmann and Taylor (2001), a group of critics defends that globalization is harmful to the environment, once it promotes the installation of polluting industries in countries with few environmental rules. However, the authors suggest that globalization can also have positive environmental effects because global connections increase institutional pressures and pressure from customers towards self-regulation, that is, so that companies adopt environmental performance standards or environmental management systems, in addition to the governmental rules requirements (CHRISTMANN, TAYLOR, 2001). Furthermore, according to Christmann and Taylor (2001), international certifications are an essential self-regulation mechanism for the development of sustainability principles, and the effects of certification affect the company performance in regard to the issue addressed by the rule.

According to Christmann and Taylor (2001), globalization can increase self-regulation pressures since multinational companies can transfer more advanced environmental technologies and developed management systems to their affiliates in response to more strict regulations of developed countries, and also because of the pressures from interest groups to improve the environmental performance in the entire world. Considering that, Rugman and Verbeke (2004) regard the multinational companies as key pushers of globalization, because such companies promote the increase of the economic interdependency among national businesses.

Peng and Pleggenkuhle-Miles (2009), however, highlight the importance of the corporate social responsibility of multinational companies towards the communities in which they operate, and the need to increasingly distinguish the relations between the competing parties in the domestic market, abroad and in global environments, since such organizations are increasingly changing from one country to the other, thus increasing their geographic coverage.

Based on the assumptions previously exposed, we have elaborated the central hypothesis of the study:

H1: The adoption of sustainable strategies is related to the export performance of companies in the gems and jewelry mineral industry (HRDLICKA, 2009; CHRISTMANN, TAYLOR, 2001; PENG, PLEGGENKUHLE-MILES, 2009).

Thus, sustainable business strategies can substantially contribute to the export performance, through the guidance towards economic, social and environmental results to the organization and its stakeholders.

### 3 STUDY METHOD

The research is characterized as descriptive and quantitative. From this, it pursues the

understanding the relation between the adoption of sustainable management strategies and the export performance of Brazilian companies manufacturing gems and jewels.

The productive chain of the gems and jewelry industry has more than 4 thousand industries and 14 thousand points of sale in the country, being responsible for transactions amount to millions of dollars on an annual basis. The exports volume in 2002, of approximately US\$ 589,573,000.00, was US\$ 1.802 billion in 2009. Since 2002, this industry is growing in average 20% a year in exports (IBGM, 2010). Considering the extension and ramifications of the gems and jewelry industry, in this research we focus the manufacturing segment, specifically the lapidated gem and ornamental rock industry, gold and silver jewelry industry, and precious metal plated jewelry industry. Thus, the research was conducted through a survey with manufacturing companies from the several segments of the industry.

Data collection was conducted through a structured questionnaire. Sustainable strategies were analyzed from the model by Placet, Anderson and Fowler (2005), through the three pillars of sustainability: environmental management, social responsibility and economic prosperity, which affect the company and the society. The export performance was analyzed through studies conducted by Papadopoulos and Martín (2010), who have researched the performance from the strategic and economic dimensions.

The questionnaire used the *likert* scale, where respondents should mark the degree (grade) which best translates his/her agreement in regard to the actions adopted by the company between 1 (smaller degree of agreement) and 5 (maximum agreement). The questionnaire was validated by specialists from the innovation and sustainability fields. With the specialists suggestions, it was perfected, and subsequently a pretest was conducted to check its fitness with three companies of the gems and jewelry industry of Rio Grande do Sul. After making the adjustments suggested by such companies in the pretest stage, data collection was started.

To conduct the study, representative companies of the industry, in the main centers of the country, and which had taken part of the International Precious Stones Fair of Soledade, in June 2011, were selected. According to Henriques and Soares (2005), the Southern region is regarded as the second major center of plated jewels in Brazil (according to IBGE survey), only behind the State of São Paulo. Furthermore, the region is one of the main centers of rough and lapidated stones, indicating that the southern region companies represent a significant share of the industry, thus being representative for the analysis.

In general, the sample companies are mainly of small scale (98% of the surveyed companies), operate in various segments of the gems and jewelry industry, and operate overseas.

Questionnaires were personally applied by researchers to the companies' responsible officers who took part of the International Fair. With support and authorization from Sindipedras, of the city of Soledade (RS), of the 70 selected companies, 32 companies were willing to participate in the survey, allowing the quantitative study, since the participation rate was high (approximately 46%). We should also consider that surveys with return rate above 30% are regarded as satisfactory in this type of survey (COOPER, SCHINDLER, 2003).

Data was descriptively analyzed, with the application of univariate techniques for the evaluation of the surveyed companies characteristics, as well as of the sustainable business strategies and export performance indicators. For the analysis of the relations between sustainable business strategies and the export performance, the *Spearman's* bivariate correlation technique was used.

#### 4 ANALYSIS OF THE SURVEY RESULTS

Concerning the profile of respondents, we observe that the time they work for their respective companies is in average approximately 14 years. Data evidence that those who are responsible for



the analyzed companies are mostly professionals with large experience in the company and in the industry.

The predominant profile of investigated companies is provided in the following summary-table.

<b>Time of operation</b>	In average, 16 years
<b>Field of activity</b>	Rough stones, lapidated stones, plated jewelry, costume jewelry and mineral handcraft.
<b>Number of employees</b>	Up to 19 employees (micro-company)
<b>Gross operating revenue</b>	Up to 1.2 million (micro-company)
<b>Share of international operations in the company's gross operating revenue (2010)</b>	In average, 44,45%

**CHART 1** – Summary of companies' profiles

**Source:** the authors.

Most companies is operating in the market for a quite long time, mainly in the segments of rough stone, lapidated stone, plated jewelry, costume jewelry and mineral handcraft. Analyzed companies are predominantly of small scale in nature, concerning the number of employees and the gross operating revenue. Furthermore, despite the difficulties of the industry, the share of international operations in their gross revenue in 2010 was quite large.

Thus, given the representativeness of the industry in the Brazilian manufacturing activity and in exports, and since such industry is particularly affected by socio-environmental issues, as well as by the need of innovation and competitiveness in the international market, the sample of analyzed companies can be considered appropriate for the evaluation of the industry behavior concerning socio-environmental issues and their relation with the export performance.

Subsequently, results regarding the international operation, sustainable business strategies and export performance of the surveyed companies are presented.

#### 4.1 International operations

The surveyed companies started their internationalization process particularly in the 2000's. The average time of operation is 16 years, being relatively young companies, which have entered the market in the same period when

the Brazilian economic opening took place, and consequently there was a accelerated expansion of emerging countries (Bric). In such period, Brazil was benefited with an exports price index which increased 54%, between 2001 and 2007. Analyzing the period and having as starting point the exchange devaluation of 1999, Brazilian exports grew 235%, while imports grew 145% up to 2007 (BOLETIM DE COMÉRCIO EXTERIOR, 2008).

At the same time, we observe that the number of Brazilian and foreign employees working for these companies abroad is not significant, since these companies' infrastructure is relatively small. Possibly this is also explained by the strategies used by such companies abroad, mainly operating with exporting activities through an own unity or through brokers from Brazil. Among the surveyed companies, only one has a subsidiary abroad, located in Peru.

Rough and lapidated stones are the main products exported by those companies, followed by gold and silver jewelry, and costume jewelry, stressing IBGM data (2010), which highlight that the products with higher receptivity in the international market are rough and/or lapidated stones (gems), with Brazil being responsible for 1/3 of the production, showing the high potential of this industry.

The main countries to which the surveyed companies export are the United States (21.67%), Italy (13.33%), China (12.50%), and Germany (10.00%).

The main strategies used by companies to conduct activities abroad are preferably the conventional and safe ways, such as exporting with or without brokerage. Such result corroborates previous researches that state that exports are the main internationalization strategy adopted by most of the Brazilian companies. Most of the surveyed companies has internationalized their activities starting with exportation, this being the main internationalization strategy used by small and middle scale companies, since this is a less risky way of getting into the foreign market, especially for not demanding high initial investment (PUNNETT, RICKS, 1994; NAIDU, PRASAD, 1994; MOTA, 2007).

In general, companies pursue internationalization since their foundation, which possibly evidence a peculiarity of this industry, but could be also related to the line of products. Most companies represented in this survey markets lapidated and rough stones, broadly accepted in the international market, but with little insertion in the domestic market, explaining the high incidence of internationalization in this industry.

Furthermore, we observe that a significant portion of such companies started to operate in the international market because a request coming from abroad, following the example of other companies. Thus, we can conclude that such companies are located in manufacturing centers, in which the activities of local productive arrangements (APLs) influence the professionalization of companies, and the market opening through actions such as the promotion of regional fairs, attracting clients from all nationalities. Such companies gain visibility because of the structure offered by the agencies

coordinating APLs activities, facilitating the relationship and trade of their products with the foreign customers, which are increasingly finding an attractive market in Brazil.

The international insertion of the gems and jewelry industry companies is a recent event, and some factors explaining their operation should be highlighted. The fast economic growth in the 1990's has exposed the domestic manufacturing sector to the foreign competition when the domestic market share of the jewelry industry has enormously reduced. In such period, there was an actual invasion of imported or smuggled jewels in the Country, especially after the Plano Real, which substantially raised the Brazilian people's income and consumption. Such fact required a quick response from Brazilian jewelers to increase their competitiveness. The national manufacturing sectors prepared itself to compete with imported jewelry, and consequently also to take part of the international market (HENRIQUES, SOARES, 2005).

Thus, the implemented actions and regulations indicate that the industry has a great potential yet to be explored, and that negotiations with the foreign market, although expressive in the trade balance, are still in the development stage.

#### 4.2 Sustainable business strategies

Sustainable business strategies are evaluated in regard to the environmental management, social responsibility and economic prosperity of surveyed companies. Data regarding the analysis of those companies' environmental management are presented in Table 1.

**TABLE 1** – Environmental management

Environmental management	Intensity (%)						Total
	Not applicable	Low		Middle	High		
	NA	1	2	3	4	5	
Initiatives searching for the administration of CO <sub>2</sub> (carbon dioxide) reduction associated carbon.	43.8	12.5	3.1	9.4	12.5	18.8	100
Pursue of eco-efficiency in productive processes	-	21.9	6.3	15.6	9.4	46.9	100
Emission control techniques	18.8	18.8	-	18.8	15.6	28.1	100
Environmental certifications	-	31.3	6.3	6.3	3.1	53.1	100

Source: the authors.

Actions related to environmental management are considered as of high intensity for most of the analyzed companies (in average 46% of the companies are in the 4<sup>th</sup> and 5<sup>th</sup> positions of the scale), revealing a high degree of commitment with the adoption of such practices. It is noteworthy the high percentage of 'not applicable' answers in regard to the carbon administration initiatives. This can make us

think that such environmental management aspect is not yet a concern for the companies of this industry, there is no legal requirement for the control nor interest of managers in discussing the matter, since the requirements to meet other environmental requirements have still a long way to go.

Social responsibility of analyzed companies is highlighted in Table 2.

**TABLE 2 – Social responsibility**

Social Responsibility	Intensity (%)						Total
	Not	Low		Middle	High		
		1	2	3	4	5	
Actions or programs to promote the wellbeing of employees	-	25.0	18.8	3.1	34.4	18.8	100
Actions or programs to promote the wellbeing of the community	-	21.9	9.4	21.9	31.3	15.6	100
Actions allowing the improvement of the use conditions of the territory where it is installed	-	18.8	3.1	9.4	31.3	37.5	100
Actions to promote the regional development improvement	-	28.1	3.1	18.8	15.6	34.4	100

**Source:** the authors.

From this table, we can observe that most of the analyzed companies highly agrees with the existence of social responsibility actions, since 50% of the companies in average are at the 4<sup>th</sup> and 5<sup>th</sup> positions of the scale. Meanwhile, a significant part of the companies (30% in average), shows to be little concerned with such issue, being at the 1<sup>st</sup> and 2<sup>nd</sup> positions of the scale. This information

seems to evidence the lack of homogeneity in the analyzed companies behavior, in regard to socio-environmental issues, revealing that such practices are not a guidance of the industry.

The analysis of aspects related to the companies' economic prosperity is presented in Table 3.

**TABLE 3 – Economic prosperity**

Economic prosperity	Intensity (%)						Total
	Not	Low		Middle	High		
		NA	1	2	3	4	
Integration of sustainable development principles to the business strategy	-	15.6	9.4	18.8	28.1	28.1	100
Cooperation with other organizations in strategy development and sustainable practices	-	18.8	9.4	18.8	18.8	34.4	100
Stakeholders involvement in the development of business strategies	-	40.6	3.1	12.5	15.6	28.1	100
Development of innovations that integrate sustainable practices into the product, in process technologies and in the business management	-	21.9	9.4	18.8	28.1	21.9	100

**Source:** the authors.

Table 3 data show that most of the companies tries to integrate sustainable development principles into the business strategy, and the cooperation with other organizations in developing strategies and sustainable practices. The involvement of stakeholders in developing business strategies is an aspect little considered, which possibly means that the analyzed companies not yet visualize the importance of integration in the decision-making process, of different audiences involved in the action, such as customers, suppliers and shareholders. Thus, we

observe that, although there is possibly a bigger investment in socio-environmental aspects, the attitude of companies in regard to such aspects seem to be only oriented towards operating and regulatory aspects.

### 4.3 Export performance

Data related to the export performance are presented in Table 4.

**TABLE 4 – Export performance**

Export performance		Intensity (%)						Total
		Not applicable	Low		Middle	High		
			1	2	3	4	5	
Strategic	Support to enter the exporting market	-	71.9	6.3	6.3	6.3	9.4	100
	Strategies to export (social and environmental awareness of products and processes)	-	31.3	9.4	18.8	25.0	15.6	100
	Mechanisms to respond to the pressure from competitors when exporting	-	28.1	6.3	9.4	34.4	21.9	100
	Improvement of market share	-	31.3	6.3	18.8	21.9	21.9	100
	Improvement from the expansion in foreign markets	-	18.8	6.3	25.0	21.9	28.1	100
	Increase of profitability	-	25.0	12.5	21.9	21.9	18.8	100
	Diversification of clients' portfolio	-	12.5	6.3	21.9	31.3	28.1	100
	Modification of the products portfolio offered	-	25.0	18.8	12.5	18.8	25.0	100
	Achievement of strategic goals from the international activity	-	25.0	6.3	34.4	21.9	12.5	100
Economic	Evolution of the exports sales percentage	-	18.8	6.3	37.5	15.6	21.9	100
	Increase of the international market share	-	31.3	15.6	21.9	12.5	18.8	100

Source: the authors.

In regard to the strategic performance, it is noteworthy that the items rated with higher intensity refer to the development of mechanisms to respond to the competitors pressure when exporting, to the obtaining improvements from the expansion in foreign markets and to the diversification of the clients' portfolio. The lesser intensity variables are related to the reception of support to enter the exporting market; to the development of strategies for

exporting purposes that aim to ensure higher social and environmental awareness in regard to products and processes; to the obtainment of market share improvement, and to the increase of profitability. The modification of the offered products portfolio is not a highlighted item in the opinion of interviewees, as well as the managers' activities in relation to the strategic goals from the international activity. This is justifiable considering that the actions promoted by regional



APLs attract customers to companies, facilitating the negotiation of their lines of products, while some companies add value to their products, creating specific lines to meet the foreign market.

In regard to the economic performance, the evolution of the exports sales percentage was evaluated in a non significant way, and the increase of the international market share had a low relevance rate. Such results corroborate the statement by Papadopoulos and Martín (2010) that the contribution of the strategy dimension is

smaller than of the economic dimension. In this case, strategic factors of the export performance have no expressive degree of application in analyzed companies, which possibly indicates that companies are not perceiving the relevance of analyzing such factors to improve their export performance.

Data related to the evaluation of the export performance indicators evolution in the past three years are presented in Table 5.

**TABLE 5** – Evolution of indicators

Indicators	DA	Negative value	From 0% to 20%	From 21% to 40%	Above 40%	Total
Actual exports growth	3.1	37.8	25.1	12.9	21.1	100
Growth perceived in the international market share	3.1	25.1	46.9	9.4	15.7	100
Actual growth of the no. of markets served	3.1	18.8	37.5	9.4	31.3	100
Growth perceived in the intensity of exports	3.1	28.1	43.8	12.5	12.5	100
Growth perceived in the profitability of exports	3.1	50.1	25.0	6.3	15.6	100

**Source:** the authors.

Data of Table 5 highlight a negative trend in the export performance of analyzed companies in the past few years. In general, indicators had a growth of up to 20%, except for the exports profitability, which for the most of companies had a significant drop.

#### 4.4 Relation between sustainable strategies and export performance

The relation between sustainable strategies and export performance is identified from the analysis of correlation between independent variable and dependent variable indicators. With the aim of checking the degree of association among variables, an exploratory analysis of data by applying the Spearman correlation tests was conducted.

##### 4.4.1 Environmental management and export performance

The significance levels of the bivariate correlation coefficients were observed among

the indicators of sustainable strategies variables (environmental management) and export performance. Correlation tests conducted allowed to check the existence of two significant associations involved four variables. Based on such results, it is possible to say that there is a positive association between some indicators that compose the environmental management and the export performance. Correlations with other indicators in the initial model were not significant. Those indicators having association with others are follows: (a) eco-efficiency of production processes with improvements in the company from the expansion of foreign markets ( $c = 0.036$ ;  $p < 0.05$ ) e (b) emission control techniques with modification of offered products portfolio ( $c = 0.044$ ;  $p < 0.05$ ). Thus, it is noteworthy that 50% of the indicators of environmental management strategies are associated to performance indicators, highlighting that, in the environmental field, investments done by companies are still of little expression.

Analyzed companies seem to visualize, in only a few aspects, the impacts of environmental

management on the export performance. Such information highlights the existence of a relative awareness about environmental issues, which are gradually implemented, with the pursuit not only of innovation for ensuring sustainability, but also with the concern of optimizing their export performance. Placet, Anderson and Fowler (2005) consider that, through the development of sustainable strategies, from the innovation of processes, the company improves its image and product composition (higher added value), thus contributing to its insertion in other markets.

#### 4.4.2 *Social responsibility and export performance*

The significance levels of the bivariate correlation coefficients were observed among the indicators of sustainable strategies variables (social responsibility) and export performance.

Correlation tests conducted allowed to see the existence of seven significant associations involved eight indicators. In general, correlation tests conducted allow us to say that there is a positive association between most of indicators (75%) that compose the social responsibility and export performance. Correlations with other indicators of the model were not significant.

From the conducted correlation analysis, it is possible to say that the indicators associated to the others are as follows: (a) *Promotion of employees wellbeing with market share increase* ( $c = 0.031$ ;  $p < 0.05$ ), *evolution of sales* ( $c = 0.036$ ;  $p < 0.05$ ), *increase of market share and mechanisms of response to the market competitors* ( $c = 0.003$ ;  $p < 0.01$ ); (b) *Promotion of community welfare with improvements in the company* ( $c = 0.028$ ;  $p < 0.05$ ); (c) *Promotion of regional development improvement with mechanisms of response to the competitors pressure* ( $c = 0.006$ ;  $p < 0.01$ ), and *improvements in the company* ( $c = 0.010$ ;  $p = 0.01$ ); and (d) *Community welfare with improvements in the company* ( $c = 0.033$ ;  $p < 0.05$ ).

It is noteworthy that three of the analyzed independent variable indicators are associated to the export performance. This shows that, in the social field, actions conducted by the companies are expressive, and were identified both in the first

and in the second phases of the survey, because most of the independent variable indicators are significant, i.e., they are practiced by most of the surveyed companies, and contribute for a higher export performance.

Placet, Anderson and Fowler studies (2005) suggest that companies implement actions to improve the life quality, and such actions are considered under a holistic perspective with the visualization of productivity gains and employees' loyalty, smaller number of complaints, new products for the developing world; they provide better work conditions to the employees; and obtain the involvement of the community, which can result in a higher performance through the improvement of the market share, more preparation to fight competitors, with improvements in the company, thus leading to the economic prosperity and to a better export performance.

#### 4.4.3 *Economic prosperity and export performance*

In relation to the variable indicators regarding sustainable strategies (economic prosperity) and export performance, we observed the existence of six significant associations involving six indicators. Based on the correlation tests conducted, in general, we observed that there is a positive association between most of indicators (75%) that compose the economic prosperity and export performance. Correlations with other indicators in the initial model were not significant.

From the conducted correlation analysis, it is possible to say that the indicators associated to the others are as follows: (a) *Integration of main sustainable development principles into the business strategy with the increase of the market share* ( $c = 0.012$ ;  $p < 0.05$ ), *improvements in the company* ( $c = 0.001$ ;  $p < 0.01$ ) and *mechanisms of response to the pressure from competitors* ( $c = 0.001$ ;  $p < 0.01$ ); (b) *Cooperation with other organizations in developing sustainable strategies and practices with the increase of the market share* ( $c = 0.022$ ;  $p < 0.05$ ); e (c) *Innovations integrating sustainable practices in developing the product, in process technologies and business management with*

*improvements in the company* ( $\chi = 0.048$ ;  $p < 0.05$ ) and *mechanisms of response to the pressure from competitors* ( $\chi = 0.029$ ;  $p < 0.05$ ).

It is noteworthy that three of the analyzed independent variable indicators are associated to the export performance. This result reveals that the economic prosperity variables are directly related to the export performance.

The most significant correlation among variables was the integration of sustainable development principles into the business strategy with improvements in the company, and mechanisms of response to the pressure from competitors. These data corroborate the analysis by Placet, Anderson and Fowler (2005), when suggesting that the sustainability can be attained through the exploration of a broad range of innovative opportunities, which can possibly result simultaneously in additional revenue, lower expenditures, higher product value and economic prosperity to their stakeholders and the society in general. It is important to attain feasible solutions encompassing the three sustainability pillars, requiring managers to customize sustainable processes and products in specific regions and with specific raw material. Placet, Anderson and Fowler (2005) come to the conclusion that the strategy should be customized for a specific situation. Competitors and newcomers can absorb part of the market, and get ready to fight, with innovative and sustainable solutions, contributing to improve the export performance.

The survey has evidenced that sustainable strategies of social responsibility take place more effectively among the surveyed companies, because most of them agrees that the analyzed indicators are mostly or entirely applicable.

Then, environmental strategies and economic prosperity show up; the percentage of strategy incidence, however, are very different in terms of percentage. Which is noteworthy is that the industry, although not making an aware use of sustainability concepts to plan strategies, is including such practices into the companies' actions. Therefore, resources are optimized, making companies more competitive, with added value products in the market where they operate.

Thus, it becomes clear that the model by Placet, Anderson and Fowler (2005) is applicable to the industry behavior analysis.

Briefly, the analytical process conclusions lead us to the conclusion that, in regard to the indicators that were used to evaluate the export performance, financial issues are declared to be more appraised than strategic issues. Furthermore, the industry has a great exporting potential, with a low degree of commitment, since its way to enter and keep the foreign market is traditional, with little resource investment. Only a single company among those surveyed is in an advanced internationalization level, with a branch abroad. Under such circumstances, the industry points out to an internationalization model based on the Uppsala school, following the internationalization model proposed by Papadopoulos and Martín (2010), which is the ground for such school.

At last, we observed that practices related to sustainable strategies implemented in the companies have significant correlations in the evaluation of the export performance among various indicators. On the other hand, this means that the intensity of sustainable practices can result in a higher export performance by companies of the industry participating in the survey.

As the conclusion of the conducted analyses, it is possible to accept the hypothesis that has guided the study development, since supposedly we believed that the actions oriented towards the adoption of sustainable strategies contribute to maximize the export performance of companies of the gems and jewelry mineral industry.

## 5 CONCLUSIONS OF THE RESEARCH

The study was conducted with the main purpose of understanding how the adoption of sustainable management strategies is related to the export performance of Brazilian manufacturing companies of the gems and jewelry industry. In order to attain the general research objective, we verified the existence of correlation between sustainable management strategies and the export

performance of manufacturing companies of the gems and jewelry industry, mainly in regard to the indicators related to regional development (social responsibility) and to the strategies that integrate a higher social and environmental awareness in products and processes (economic prosperity), with two dimensions in the export performance: improvements in the companies and response to the pressure from competitors.

The central hypothesis that has guided the obtainment of the survey results (that is, the adoption of sustainable strategies is related to the export performance of companies of the gems and jewelry mineral industry) was corroborated, suggesting that the companies that try to have a higher export performance should be alert to the implementation of sustainable business strategies.

In regard to the characterization of the surveyed companies international operation, it was possible to observe that the companies operate, above all, through direct exportation or agents in Brazil. Reasons pushing them to pursue new markets were the intent to get international from its origin, and request from abroad, mainly since the beginning of this century. This information makes us think that the internationalization process of the gems and jewelry industry companies is recent, having potential to become a generator of important income. Another relevant factor is that companies trade their products using regional materials, and by adding value to their products, they produce unique products.

The study had some methodological limitations resulting from the participant companies selection process. The sample was chosen considering the accessibility to the companies, and not through probabilistic sample, which reduces the study applicability range, and we cannot infer that such revealed behaviors identify the whole industry.

Thus, in order to deepen the studies herein presented, we suggest that new attempts are done, to expand the number of participant companies, in order to allow a bigger coverage of various scales companies belonging to various segments of the industry in Brazil. We suggest that because

other analyses might be developed to identify the dynamics of sustainable management strategies and how they are been perceived by part of the stakeholders, with the aim of expanding the awareness about concepts and their advantages in the implementation of business strategies planning. Furthermore, we suggest the evaluation of the industry per types of products, and which are their challenges in view of the international market, to more precisely detailed each of the sustainability pillars that might influence in a higher export performance.

Therefore, despite the limitations, the study conclusions are relevant. The analyses are valid to describe and to administratively evaluate companies that are inserted in the international market, and also for those willing to enter new markets.

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