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# THE INFLUENCE OF THE ENVIRONMENTAL ORGANIZATIONAL CAPABILITIES ON THE COMPETITIVE ADVANTAGE

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***Abstract*—** This paper is positioned in the broader context of natural resource based theory of the firm and of theory of dynamic capabilities**.** We have proposed the hypothesis that the organizational capabilities achieved by firms through environmental investments would lead to competitive advantages. Then we have tested this hypothesis, through the research method of survey, on a sample of 109 firms in the textile Romanian industry. In this sector, environmental management is more and more integrated in the operational global activity of big retailers, and there is a risk that smaller firms in the supply chain to have difficulties in fulfilling the requests of their retailer clients. The data was analyzed by the correlation and the regression method. The conclusions are that the organizational capabilities achieved through environmental investments influence positively only the competitive advantages based on costs and on differentiation, partially confirming our hypothesis.

***Keywords*—** competitive advantage, environmental investments, organizational capabilities

## I. INTRODUCTION

THE opportunity of environmental investments derives from the possibility to reduce the costs, to raise the profits and the competitivity of firms. Following this arguing path, the strategic management tackles the issue of organizational competitivity that enhances performance and supports development. The competitivity is defined as the "potential of companies to enhance their profitability on long term". The idea to consolidate the competitivity of companies by their environmental behaviour is structured on two theoretical platforms: 1. the natural resource based vision of firm [1] and the stakeholder theory [2].

The *resource based vision* of the firm relates the strategic advantages of an organization to its resources, which are characterized by their strategic importance and by the ability of organizations to use them more efficiently than their competitors. The sustainable competitive advantages can be generated by resources that offer added value to an organization, are unique, difficult to imitate, and are not interchangeably. Among the most important, according this theory, are the financial, physical, human and organizational resources.

The *theory of dynamic capabilities* allows handling of some deficiencies of the resource based vision of the effects and of capabilities' evolvement.

This theory illustrates the necessity that the company modifies the basis of its resources and capabilities in order to be competitive and to generate new strategies, creating value. Dynamic capabilities are defined by Teece [3] as being the ability to build, integrate and reconfigure internal and external competencies in order to react to changing environments. According to Prahalad and Hamel [4], dynamic capabilities derive from collective learning of an organization, especially in the relation with the production techniques coordination and technologies integration, based on intangible assets, especially on organizational and technological knowledge of the company. Also, it was stated that the development of dynamic capabilities is determined by the learning mechanisms as repetition, trying and error, experience, as the same market dynamism. Although this vision is different from the resource based theory because of inclusion of dynamism in the model, they both show the importance of internal resources of the business, especially of those that are not tangible, among there is the environmental capital of the firm.

The contribution of proactive environmental management to competitive advantage takes the shape of cost or differentiation [5]. The advantages based on cost derive from the adoption of some practices that improve the productive process [1], increasing its efficiency and reducing the costs of inputs and waste elimination. Decisions as that to purchase new not pollutant technologies or considering environmental friendly transport and distribution systems, the eco-design of products or processes will allow the company to gain competitive advantages that derive from cost reduction [6]. Christmann [7] argues that a higher level of innovation regarding the proactive limiting pollution technologies will lead to a higher competitive advantage derived from environmental strategies. Differentiation

advantages usually derive from the perception of clients that the product is more valuable. In this way, the advantages based on differentiation usually depend on the matching of product characteristics and market needs with the firm's ability to promote the environmental characteristics of its products and services.

In this relation, the firm's capabilities should be considered as a mediator variable. The importance of superior resources and capabilities development for a firm, based on the firm's relation with the natural environment, is identified as a source of competitive advantage [7], [8], [9].

## II. LITERATURE REVIEW

Our study has the goal to deepen Sharma and Vredenburg's study [9], which has established three capabilities:

### *A. The capability to integrate stakeholders*

This capability implies the ability to establish collaboration relations based on trust with a wide variety of stakeholders, especially those with non-economic goals, as local communities, environmental groups, regulation organizations etc. The integration of stakeholders results not only from the product management, but also from the habitats conservation activities, resource management, waste reduction, energy conservation.

### *B. The capability of organizational learning*

Organizational learning is defined as the "development of knowledge, new senses and associations between past actions, the effectiveness of those actions and future actions". Learning in organizations is described as the successful adaptation of that organization that evolves in a rapid changes environment with behavioral results based on common ideology and understanding of changes that occur.

Changes in business environment that motivate exploring new alternative organizational procedures, technologies, environments and objectives can lead high level learning. This involves development of new interpretations of new or existing information, as a result of the development of new senses for surrounding events [10] .This type of learning characterizes organizational change in conditions of ambiguity and uncertain information.

The strategies that an organization can adopt in order to face these ambiguities and lack of information will create a context for the interpretation of these aspects and for decision making, thus leading to the capability of organizational learning. In this way, the environmental strategies can lead to different ways of learning and creating knowledge on the interface business/natural environment for every company.

### *C. The capability of continuous innovation*

The learning processes, determined by responsivity environmental strategies, lead to changes in organizational activities, procedures and objectives. Changes of technologies, processes, specifications, inputs and products can stimulate the achievement of internal capabilities and intangible assets based on knowledge [11]. While environmental changes offer opportunities for the company to be the first mover on a market, the probability that firm to benefit in a sustainable manner from this status will depend on the development of these capabilities. A capability to continuously generate an innovation flow offers the company the possibility to be a step ahead of the competitors that do not poses this capability. Hart names this capability as being one of continuous upgrading, which results from the organizational efforts to reduce, minimize and eliminate waste.

### *D. Competitive advantages and environmental management*

The strategic model of environmental management suggests that firm's investments in environmental capabilities create a reduced cost structure or/and a competitive advantage based on specialization/differentiation. Firms that adopt a strategic perspective of environmental management have the purpose to compete mainly by the marketing-mix variables as the product, the distribution, the promotion.

*Competitive advantages based on costs* generally derive from adopting some practices that enhance the efficiency of productive processes, by reducing the input costs and the waste elimination costs. Decisions as that to procure new not pollutant technologies, considering environmental friendly systems of transport and distribution or the eco-design of products and processes will allow the firm to gain competitive advantages that derive from cost reduction.

*Competitive advantages based on differentiation* derive from the perception of clients that the product is more valuable. Thus, the differentiation advantages usually depend on the matching of product characteristics and the market needs with the firm's ability to promote the environmental characteristics of its products and services.

*Competitive advantage based on operational performance* derives from a significant positive impact of the environmental management system on the operational performance quantified by increased quality, reduced costs, market position, and increased chances to sell the products on international markets, shorter delivery terms, increased reputation, and reduction of waste in productive processes [12].

On the basis of this comprehensive literature review, we are proposing the next hypothesis:" The capabilities developed by environmental investments of firms will probably directly lead to competitive advantages for those firms".

## III. TESTING OF THE HYPOTHESIS

We have tested this hypothesis using the survey method. The textile industry was chosen to test our

hypothesis because it is characterized by a competitive environment that exerts pressures to lower the prices, by shorter and shorter life cycles of products, by a fragmented and globalized production process and by a demand dominated by consumers and supply chains dominated by buyers.

This sector has also become the center of attention in the issue of sustainable development, and the demand for apparel based on ethical activities is increasing.

We have received answers from 109 managers from the textile romanian firms.

*A. Measuring of capabilities*

The resource based vision of the firm can be completed by adding a direct link between the investments of the firm Hart type resources domains and the development of some firm specific environmental capabilities: the capability of organizational learning, the integration of stakeholders and the capacity to innovate.

The constucts used in our study are:

1) *The capability to integrate stakeholders*, which is calculated as the score obtained by one item: the measure in which the firm is capable of colaborating with stakeholders in order to find solutions to environmental problems.

2) *The capability to learn*, calculated as the average scores obtained by two items:

a) the measure in which the firm is capable to act before another firms in its sector;

b) the measure in which the firm is able to find opportunities in the changes of environmental regulation.

3) *The capability to innovate*, calculated as the average scores obtained by the next two items:

a) the measure in which the firm is capable to innovate and to continuously enhance its operational activity at the same time with environmental impact reduction;

b) the measure in which the firm has the ability to continuously improve its processes, products and systems.

*B. Measuring of competitive advantages*

The first dependent variable in our study is a subjective estimation of the competitive advantages based on costs that result from the environmental strategy of every firm, compared to its main competitors. This measure is preferable instead of financial performance indicators and cost reduction estimations from environmental practices because many factors from outside the environmental strategy of a firm affect its financial performance. In order to isolate the effect of environmental strategy on the competitivity, we have developed a measure that surprises more narrowly the effect of this strategy on cost advantages than a standard measure of financial performance.

1) The construct *competitive advantage based on costs* is composed of several items. Its score was calculated as an average of scores obtained by the items that form the construct:

a) a more efficient using of resources;

b) lower processing/production costs;

c) lower costs of conforming with the existing legislation;

d) lower financing costs.

2) The second dependent variable is the *advantage based on differentiation*. A strategy of differentiation allows a company to create a unique product, which clients perceive to be different or distinctive in a certain way that is important to them. Thus the company is able to practice a premium price for its products and services. These advantages can be achieved by differentiating the products (if the products are green) or by an enhanced firm reputation. The products that are manufactured with sustainable processes and also the products that themselves are labeled as being green can be considered unique and different by the consumers. This aspect leads to incomes beyond average for those companies

Researchers in management asserted that higher income could compensate growing costs caused by an enhanced environmental performance. Environmental certifications offer a new manner of differentiation for the consumers. The items that compose the construct "competitive advantage through differentiation" in our study are:

a) the ability to justify a premium price for our products;

b) the bigger loyalty of our clients;

c) the raised ability to enter new markets;

d) more potential sources of income.

The measure of the construct was calculated as the average of individual items' scores.

3) The third dependent variable that represents the competitive advantage is the *operational performance*. Firms that use a formal environmental management system perceive increased positive impacts on many dimensions of operational performance than the firms that did not certified their system. The items that compose this construct in our study are:

a) increased productivity;

b) higher employees' moral;

c) optimization of supply chain;

d) enhanced reputation of the company and higher negotiation power;

e) lower financial and operational risk.

## IV. THE RESULTS OF DATA ANALYSIS

In order to determine the influence of the independent variables (the organizational capabilities) on the dependent variables (the competitive advantages) we have calculated the correlation coefficients between the two types of variables and then we have performed a multiple linear regression analysis. Table I presents the correlation coefficients between the analyzed variables.

According to the data in the table, it can be noticed the existence of a weak positive relation between the components of the variable *Organizational capabilities* and the variables that compose the *Competitive advantages*, except for the variable *Competitive advantages based on operational performance*, which is not correlated with any of the capabilities.

TABLE I
THE CORRELATION COEFFICIENTS

| Correlations | Competitive advantages based on costs | | Competitive advantages based on differentiation | | Competitive advantages based on operational performance | |
|---|---|---|---|---|---|---|
| | R | $R^2$ | R | $R^2$ | R | $R^2$ |
| *Capability to integrate stakeholders* | .270* | 7.9% | .332** | 9.8% | - | - |
| *Capability of learning* | .272* | 6.9% | .324** | 10% | .197* | 3.4% |
| *Capability to innovate* | .309* | 9.6% | .365** | 10.9 % | - | - |

**- level of trust 99%
* - level of trust 95%

The trend line in the scatter diagram shows a linear relationship between the variables, justifying the choice of the linear regression for the estimation of mathematic model that describes the relation between the independent and the dependent variables.

We have used the multiple linear regressions with the SPSS software, a stepwise method, in order to eliminate the variables that have not an important influence on the dependent variable.

The model that describes the relation between the independent variables *Capabilities* and the dependent variable *Competitive advantage based on costs* is statistically significant and is represented by the equation:

*Competitive advantage based on costs = 1.265 + 0.216* capability to innovate*

The capability to innovate appears to have the highest influence of all the independent variables on the competitive advantage based on costs.

The model that describes the relation between independent variables *Organizational capabilities* and the dependent variable *Competitive advantage based on differentiation* is statistically significant and is represented by the equation:

*Competitive advantage based on differentiation = 0.862 + 0.304* capability to innovate*

It appears that the *Capability to innovate* influences the most the dependent variable *Competitive advantage based on differentiation*.

The regression analyze had no result for the relation between the independent variables and the dependent variable *Competitive advantage based on operational performance*, confirming the results of correlation analysis.

## V. CONCLUSIONS

The innovation capability appears to be the common significant predictor of the competitive advantages based on cost reduction and on differentiation. The competitive advantages based on operational performance are not influenced by any of the capabilities created in a company through environmental investments. Nevertheless, the correlation analysis shows the fact that the capability to integrate stakeholders, respectively the capability of continuous learning, have a positive, but weaker, influence on competitive advantages based on costs and on differentiation.

## REFERENCES

[1] S. Hart," A natural-resource-based view of the firm", *Academy of Management Review*, vol. 20, no.4, pp. 986-1014, 1995.
[2] T. Donaldson, L. Preston, "The Stakeholder Theory of the Corporation: Concepts, Evidence, and Implications", *The Academy of Management Review*, vol. 20, no.1, pp.65-91, 1995.
[3] D.Teece, G. Pisano, A. Shuen, "Dynamic Capabilities and Strategic Management", *Strategic Management Journal*, Vol. 18, No. 7, pp. 509-533, 1997.
[3] C. Prahalad, G. Hamel, "The core competence of the corporations", *Harvard Business Review*, vol.68, no.3, pp.79-91, 1990.
[4] J. González-Benito, O. González-Benito, "Environmental proactivity and business performance: an empirical analysis", *Omega*, vol. 33, no. 1, pp. 1-15, 2005.
[5] P. Shrivastava, "Environmental technologies and competitive advantage", *Strategic Management Journal*, Vol. 16, pp. 183-200, 1995.
[6] P. Christmann, "Effects of "Best Practices" of Environmental Management on Cost Advantage: The Role of Complementary Assets", *Academy Management Journal*, vol. 43 no. 4, pp. 663-680, 2000.
[7] J. Aragón-Correa, S. Sharma, "A Contingent Resource-Based View of Proactive Corporate Environmental Strategy", *Academy of Management Review*, vol. 28 no. 1, pp. 71-88, 2003.
[8] S. Sharma, H. Vredenburg, "Proactive corporate environmental strategy and the development of competitively valuable organizational capabilities", *Strategic Management Journal*, vol. 19, pp. 729–753, 1998.
[9] C. Fiol, "Consensus, diversity, and learning in organizations", *Organization Science*, vol.5, pp.403-420, 1994.
[10] B. Marr, C. Adams, 2004, "The balanced scorecard and intangible assets: similar ideas, unaligned concepts", *Measuring Business Excellence*, vol. 8, no.3, pp.18 - 27, 2004.
[11] R. Sroufe, "Effects of environmental management systems on environmental management practices and operations", *Production and Operations Management*, vol.12, no.3, pp. 416-431, 2003.
[12] S. Melnyk, R. Sroufe, R.Calantone, "Assessing the impact of environmental management systems on corporate and environmental performance", *Journal of Operations Management*, vol.21, no.3, pp. 329-351, 2003.