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The relation between proactive environmental strategies and competitive advantage

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Abstract. There are two distinct orientations of the environmental management that companies may adopt: the model of compliance and the strategic model. The strategic model treats environmental expenses as investments that will lead to competitive advantage for the company. Nevertheless, there are few scientific works that prove the relation between corporate environmental investments and competitive advantage. Thereby, in order to bring clarifications about the profound implications of environmental investments, in the first stage of our research we have proposed the hypothesis that the environmental investments would probably lead to competitive advantage by creating capabilities that are mediators of this relation. In the second stage we have tested this hypothesis, using the research method of survey. A questionnaire was sent to managers in textile Romanian industry, and 109 answers were received. The data was analysed using the linear multiple regression method and the results confirm our hypothesis.

1. Introduction

From the moment the World Commission's Report on Environment and Development (known as the Brundtland Report) defined the term of sustainable development, in 1987, the managers of companies and management researchers searched reasons for "how" and "why" companies should incorporate environmental preoccupations in their strategic thinking. The relation between a proactive approach of environmental preoccupations and the firm's performance is a controversial issue in the literature. The reasons for that is because while some studies have proved a positive relation between the two [1], other studies do not identify a positive impact of environmental proactivity on financial performance, [2].

Our study is based on the resource based view of the firm and on the dynamic capabilities theory and its goal is to bring clarifications on the question "why" companies should consider adopting proactive environmental strategies in order to increase their competitive advantages and "what" is the mechanism that creates this advantage.

The resource based vision relates strategic advantages of an organisation to its resources, which are characterised by their strategic importance and by the organizations' ability to use them more efficiently than their competitors. The resources that offer added value to an organization are unique or valuable, difficult to imitate, not interchangeably. Among the most important resources, according this theory, are financial, physical, human and organizational resources [3].

The dynamic capabilities theory allows solving the deficiencies of the resource based vision of firm, with respect to considering the effects of time passing and evolution of capabilities. The dynamic



capabilities are defined by Teece, [4] as the abilities to build, integrate and reconfigure the internal and external competencies in order to react to changing environments. The competitive benefits are perceived by the managers of proactive companies as the results of the strengths achieved by responsive environmental strategies. These strengths or capabilities are the coordinating mechanisms that facilitate the most efficient and competitive use of the firm's assets -tangible or intangible, [5].

The contribution of proactive environmental management to competitive advantage encompasses the cost and differentiation advantages, [6]. In this relation, the firm's capabilities should be considered a mediator variable. Wagner [2] identifies the importance for the firms to develop superior capabilities and resources, based on their relation with the natural environment as source of competitive advantage.

Table 1 presents a synthesis of the orientation of environmental management and sources of derived competitive advantage.

Table 1. The orientation of environmental management, sources and forms of competitive advantage.

The orientation of environmental management, sources and forms of competitive advantage		
Orientation of environmental management system	Sources of competitive advantage	Forms of advantage
Conformation model [7]	Environmental expenses are seen as costs, not as investments in competitive advantages	Potential advantage based on costs, but typically non-sustainable because this model suggests compliance with minimum environmental requirements
Strategic model	Environmental expenses are considered investments in firm's ability to create value for owners, clients and other stakeholders, through the development of superior competences or through adding basic resources, building a strategy based on competences [8]	Competitive advantage based on costs because of economies resulted from continuous improvements, "pollution prevention" programs, life cycle analysis, and potential lower expenses from litigations, lower insurance costs and lower energy costs And/or Competitive advantage based on a position of specialization/differentiation which endorses the consumers sensitive to environmental problems or discovers/creates market performance as an entrance barrier. Enhanced image of the company could be a benefit of this positioning advantage [5].

According the resource based theory on firm, environmental strategies are put into practice by a group of simultaneous investments in several types of resources. Buysee and Verbeke [9] have empirically tested Hart's typology [7] and concluded that, by adopting a perspective of the resource based vision, an environmental strategy can be expressed as ungrouped investments in five distinct types of resources. These can be described as: 1. conventional environmental competences, which result from investments in productive products and processes. 2. training of employees in environmental issues; 3. formal management systems; 5. strategic planning that incorporates environmental issues. Buysee and Verbeke found that simultaneous investments in such resource domains are required to advance with respect to environmental proactivity. But they did not consider

the profound consequences of these investments, like the development of the specific firm capabilities, which can lead to the achievement of competitive advantages.

Our study aims to complete the resource based theory of firm, by proposing the hypothesis that: "Investments in five types of resources (according Hart's theory) - employees' abilities, organizational competencies, formal management systems, strategic planning, will probably lead to the development of firm's capabilities".

2. Testing the hypothesis

In order to test our hypothesis we have used the survey method. A questionnaire was sent to 1000 managers of the textile firms in Romania. The companies were selected from the publicly available data bases. We have received 109 answers. The textile industry was chosen to test the hypothesis because this industry has evolved as a global, fragmented and complex system, that in order to reduce the social and environmental impacts along its products' life cycle uses an increasing number of corporate responsibility policies.

3. Measuring the environmental investments

The constructs that describe the investments in the five Hart type resource domains and their components are:

1. Investments in conventional environmental competences (products and productive processes) - resource domain 1:
 - implementation of processes that reduce/eliminate the emissions of pollutants;
 - elimination and treatment of hazardous waste;
 - implementation of pollution control equipments;
 - waste recycling;
 - implementation of alarm/control systems for environmental accidents;
 - systematic control of energy consumption;
 - recycling of water used in the production process.
2. Investments in training and participation of employees in environmental aspects-resource domain 2:
 - employees' training in environmental aspects.
3. Investments in organizational environmental competencies, which cross various functional areas of the company - resource domain 3:
 - the company offers products and services that address consumers interested in environmental aspects;
 - the products have been re-designed to reduce their impact on the environment.
4. Investment in management systems and formal procedures - resource domain 4:
 - use of formal procedures to analyze environmental aspects for all the capital investments of the company;
 - settling specific objectives for the environmental performance;
 - Implementation of an environmental management system;
 - auditing of the environmental activity;
 - the existence of specific environmental standards to assess the suppliers.
5. Investments in strategic planning that incorporates environmental aspects - resource domain 5:
 - strategic environmental planning;
 - identification and assessment of new environmental aspects for their impact on the company on long term (five years or more).

The score assigned to every item has resulted from the answer to the next question:

"How would you evaluate the effort of the company (investments, time allocated by the managers) regarding the next issues?" (on a scale of 1 to 5, where 1=there are no initiatives of this type, to 5 = very significant efforts)

The measure of every construct is the average of scores obtained by the items that compose every construct.

4. Measuring the organizational capabilities

In our study, we have used constructs based on the capabilities established by Sharma and Vredenburg [10], for which we have proposed component items [9]:

1. The capability to integrate the stakeholders

This capability implies the ability to establish collaboration relations based on trust with a wide variety of stakeholders, especially those with non-economic aims. These stakeholders can comprise local communities, environmental groups, regulation organizations, non-governmental organizations etc. The integration of stakeholders results not only from the product management, but also from the activities of habits conservation, resource management, waste reduction, energy conservation. The proactive companies engage the stakeholders in dialogues on the new locations, factory projects, and decisions on the waste recycling. The score of this construct was obtained by answering this question (on a Likert scale from 1 to 5): "What is the degree in which your firm is capable to collaborate with the stakeholders to find solutions for environmental problems?".

2. The capability of 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 the organizations is described as the successful adaptation of the organization that evolves in an environment with rapid changes and as results of the behaviour based on common ideology and understanding of the changes that take place.

The capability to learn was calculated as the average of the scores obtained by these items (on a scale from 1 to 5):

- the degree in which the firm is capable to act before other firms in the sector;

- the degree in which the firm is capable to find opportunities in the environmental regulations shifts

3. The capability of continuous innovation

The learning processes, determined by environmental responsive strategies lead to changes of the organizational activities, procedures and objectives. Changes in technologies, processes, specifications, inputs and products can stimulate the achievement of internal capabilities and intangible assets based on knowledge. While environmental changes offer opportunities to the firm 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. The scores of this construct are calculated as the average of scores obtained by the items (on a scale from 1 to 5):

- the degree in which the firm is capable to continuously innovate and enhance its operational activity while it reduces the environmental impact and

- the degree in which the firm has the ability to make continuous upgrading of its processes, products and systems.

5. The results of data analysis

In order to analyse the obtained data we have calculated the correlation coefficients between the two types of variables and then we have performed a linear multiple regression analysis with the SPSS software. The independent variables are the investments in the five resource domains (defined in the equation as X_1 - X_5), whereas the dependent variables are the organizational capabilities (defined in the equation as Y_1 - Y_3). We have performed three regression analyses, one for every capability as dependent variable. Table 2 presents the correlation coefficients between the analysed variables.

According to the values of R (Pearson correlation coefficient) in the table, we can conclude that there is a positive strong relation between the variables Investments in and the variables that describe the organizational capabilities. The R^2 is the coefficient of determination that indicates how well fits the data a linear model.

Table 2. Correlations between the environmental investments in resource domains and the capabilities that are mediators for achieving competitive advantages.

Correlations	Capability to integrate stakeholders		Capability to learn		Capability to innovate	
	R	R ²	R	R ²	R	R ²
Investments in resource domain 1	.509**	24.1%	.449**	20.2%	.547**	31.3%
Investments in resource domain 1	.500**	25.9%	.474**	22.4%	.499**	24.8%
Investments in resource domain 1	.447**	22.1%	.524**	27.5%	.519**	27.7%
Investments in resource domain 1	.494**	24.4%	.592**	34.7%	.606**	38.9%
Investments in resource domain 1	.472**	22.3%	.423**	17.9%	.569**	31.7%

**level of trust 99%

The values of the Pearson coefficient for all the correlations are included in the interval 0.44-0.606, which shows a strong positive relation between the analysed 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 "Investments in resource domains" and the dependent variable "Integration of stakeholders" is statistically significant and is represented by the equation:

$$\text{Integration of stakeholders } (Y_1) = 1.788 + 0.398 * \text{investments in resource domain 2 } (X_2) + 0.287 * \text{investments in resource domain 3 } (X_3)$$

The investments in resource domains 2 appear to have the strongest positive influence on the capability of stakeholder integration.

The model that describes the relation between independent variables "Investments in resource domains" and the dependent variable "Capability of organizational learning" is statistically significant and is represented by the equation:

$$\text{Organizational learning } (Y_2) = 1.405 + 0.437 * \text{investments in the resource domain 4 } (X_4) + 0.213 * \text{investments in resource domain 3 } (X_3)$$

It appears that the capability of learning is most influenced by the investments in resource domain 4 and investments in resource domain 3.

The model that describes the relation between independent variables "Investments in resource domains" and the dependent variable "Capability of continuous innovation" is statistically significant and is represented by the equation:

$$\text{Capability of continuous innovation } (Y_3) = 1.620 + 0.446 * \text{investments in resource domain 4 } (X_4) + 0.224 * \text{investments in resource domain 5 } (X_5)$$

It appears that the investments in resource domain 4 and in resource domain 5 have the strongest influence on the organizational capability of continuous innovation.

Thus, the stated hypothesis is partially confirmed. Sustained investment in resource domains 2 and 3 have the strongest positive influence on the development of the capability to integrate stakeholders, while investments in resource domains 3 and 4 positively influence the capability of organizational learning. Also, investments in the resource domain 4 and investments in resource domain 5 favour the development of the innovation capability.

6. Conclusions

The sustained investments in all resource domains are highly correlated with each other. This is the reason for which the stepwise regression analysis eliminated from the models some types of

investments. These correlations support the assertion that including the environmental aspects in strategic planning (resource domain 5) raises the employees' opportunities to practice and extend their knowledge on environmental protection (resource domain 2), and also to enhance the conventional environmental competencies of the company (resource domain 1) through all functional areas (resource domain 3). As a result, employees can reconfigure the formal management systems and procedures (resource domain 4).

We can conclude that not generally the environmental strategies influence the development of corporate strategies, but the investment in several resource domains. The capabilities are the result of sustained and simultaneous investments across these multiple resource domains, rather than of focusing on only one area.

The textile industry is characterized by a global competition, the shortening of products' life cycles and the decline of entry barriers. In this context, the resource based vision of the firm can offer an additional guidance to develop competitive strategies. The complex and comprehensive environmental strategies put into practice by investments in Hart type resource domains could be a new important competitive field to which the leader companies must pay attention, as they can positively influence the development of organizational capabilities that provide competitive advantages.

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