ENVIRONMENTAL PERFORMANCE OF CROATIAN COMPANIES IN RELATION TO OWNERSHIP TYPE

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UDK/UDC: 504.06.003.5(497.5)
JEL classification / JEL klasifikacija: Q51
Original scientific paper / Izvorni znanstveni rad
Received / Primljeno: March 30, 2010 / 30. ožujka 2010.
Accepted for publishing / Prihvaćeno za tisak: June 15, 2010 / 15. lipnja 2010.

Summary

In the light of corporate social responsibility, company success is determined not only by economic performance but also by social and environmental performance. Hence, the value based environmental management improves corporate environmental performance and enhances business excellence. The purpose of this paper is to examine the differences in environmental performance among companies of various type of ownership in Croatia (e. g. private ownership, state ownership, and foreign ownership), to compare the main obstacles in achieving better environmental performance of these companies, and to explore the influence of environmentally friendly products on important company characteristics.

Within the secondary research, relevant literature covering this issue was consulted. Within the primary research, a study was conducted on the sample of 350 Croatian companies and 63 questionnaires were received. Statistical data analysis was done using SPSS 13.0. Three ownership-type groups were compared by Chi-square tests and ANOVA analysis.

According to our findings, there are no differences among Croatian companies of different ownership types in the majority of environmental performance dimensions. Statistically significant differences can be established only in product/services environmental features and device/equipment environmental features. The highest obstacles in achieving better environmental impact are: weak government incentives, high purchasing costs of clean technologies, insufficient legislation, and increased production costs of new clean technologies. As regards the influence of introduction of environmentally friendly products

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on certain company attributes, the paper has shown that the highest influence of environmentally friendly products is on the company image.

Key words: *environmental performance, ownership type, Croatia.*

1. INTRODUCTION

In the past few decades, environmental protection has become an increasingly important corporate issue at the global level. Many companies have initiated various activities to improve environmental performance such as introducing lower emission plants and technologies and developing environmentally friendly products as a part of their social responsibility. In Croatia, some companies have made significant environmental improvements, but others still find it hard to manage environmental issues. Hence, the big challenge for many Croatian companies is the application of the principles of sustainable development and the introduction of environmental management systems that improve the environmental performance. An environmental management system is compatible with a quality management system by enhancing the overall quality of a company's processes and products/services, and by helping in achieving business excellence.

Just like other transitional countries, Croatia has passed through the privatization process. It has included the reform of state-owned companies, the stimulus for private companies and the move to increase the attractiveness of Croatia to foreign investors. The aim of the process of privatization and restructuring has been to increase the efficiency and profitability of the Croatian economy. We might expect that privately owned companies use their resources efficiently and that higher resource productivity induces lower pollution. But these companies can be more profit oriented and less oriented to other goals. On the other hand, state-owned companies might express greater responsibility for social and environmental issues and therefore might stimulate better environmental performance. Companies with foreign ownership usually emanate from the OECD countries and thus have more modern and environmentally friendly technologies. OECD based companies have stronger external forces that drive their environmental management, such as more stringent regulations, environmentally aware customers and investors, insurance agencies and society, NGO and media, business associations etc. Additional reasons are internal motivators such as better risk management, more motivated labor force, marketing advantages, productivity increase, better image etc. Wallace and Zarski argue that such advanced technologies may be indirectly passed on to domestic firms via backward or forward linkages (Wallace 1996, Zarski, 1999). In this paper we want to explore the environmental performance of companies with foreign ownership, since many such companies entered the Croatian economy in the last few decades, as well as the environmental performance of domestic private and state owned companies

2. THEORETHICAL BACKGROUND OF THE PROBLEM

To the best of our knowledge, there are not many empirical studies that examine the connection between company ownership and environmental performance.

One recent economic analysis explores the effects of the ownership structure on corporate environmental performance using a panel of Czech firms (Earnhart and Lizal, 2002). The paper analyses state-owned companies and privately owned companies, differing between concentrating and diffuse private ownership. The conclusion is that state ownership improves the environmental performance in comparison to other investor types but it depends on the treatment of firm-specific effects. Random effect estimation results imply that the effects of state ownership on environmental performance are insignificant. No type of private ownership significantly affects the environmental performance.

There are a limited number of papers that have analyzed the influence of foreign ownership on environmental performance and their evidences are mixed. Several researches suggested that companies with foreign ownership had a small impact on the environmental performance (Huq and Wheeler, 1993, Pargal and Wheeler, 1996, Hartman *et al.*1997, Dasgupta *et.al.,* 2000). In contrast, other research conducted in Cote d'Ivoire, Venezuela and Mexico finds that foreign ownership reduces the energy intensity of plants (Eskeland and Harrison, 2003). Panel of data covering companies in Ghana reveals that foreign ownership *per se* does not influence fuel use or total energy use but increases the use of electricity that is among the cleanest sources of energy (Cole *et.al,* 2007). The same research finds that companies are more likely to use less total energy if the key decision-maker has had previous training with a foreign company. The research based on confidential in-depth interviews with 236 facilities in Mexico concludes that foreign ownership has only a marginal effect on environmental compliance, but managers with international experience achieved a higher level of compliance (Dasgupta *et.al.*, 2000). In other words, usage of more advanced technologies may depend on awareness, willingness and/or competencies of the key decision-maker in foreign companies. One recent economic analysis explores the difference in environmental performance of industries with different ownership type in China – state owned, collectively owned, privately owned, foreign directly invested, joint ventures (Wang and Jin, 2002). The results show that foreign companies have the lowest pollution discharge intensity while the state owned companies have the worst environmental performance followed by domestic private companies. Chinese collectively owned companies have a better performance in pollution reduction than the domestic private sector.

Another empirical study has tested the relationship between ownership structure and environmental investment (Uchida and Goto, 2006). Findings are that environmental investment is not associated with the directors' ownership level (there doesn't seem to be a substantial shareholder-manager conflict) and that environmental investment is positively related to the financial institutions' ownership level (sophisticated investors with higher level of environmental consciousness).

3. ELABORATION

3.1. Research methodology

The aim of the paper is to examine differences in environmental performance among companies of different ownership structure in Croatia. We have made the following hypothesis:

H1. There is a difference among private ownership companies, state ownership companies and foreign ownership companies regarding environmental performance.

The basis for this paper is a study that was conducted in Croatia in the end of 2004 and during the first three months of 2005. The sample covered 350 Croatian companies in all branches of the economy. The sample covered manufacturing, non-manufacturing and trading companies. It was attempted to cover small, medium and large companies proportionally. The study questionnaire consisted of basic information about the company and 66 questions in the areas of competitive structure, strategy, organizational structure, technology, compensation management and environmental management. Table 1 shows independent characteristics of the examined companies.

Table 1: Independent characteristics of examined companies

Independent characteristic of company	Distribution in the sample		
Size of company	Small (15-100 employees)	Medium (101-500 employees)	Large (more than 500 employees)
	25.4%	39.7%	34.9%
Ownership majority	State	Private	Foreign
	15.9%	58.7%	25.4%
Industry	Manufacturing	Non manufacturing	
	82.5%	17.5%	

The questionnaire was distributed to top managers, which is logical in view of the nature of the study. Within 70 days, 63 questionnaires were received. Questionnaire return rate was 18% which is satisfactory for the purpose of our study. All key major Croatian companies returned their questionnaires. Companies which returned the questionnaires employed 52667 people in 2004, gained total revenue of 2.984.036.147 US$ and made total profits of 215.894.912 US$. We consider the study sample representative considering that the surveyed companies employ more than 4.1% of all employees in Croatia.

The survey sample consisted of small, medium and large companies. We consider small companies those that employ between 15 and 100 employees, medium employ from 101 to 500 employees and large employ more than 500 employees. Medium sized companies were the most numerous in our survey sample (39.7%), small companies accounted for 25.4% of all companies and remaining 34.9% were large sized companies. Sampled companies were mostly majority privately owned (58.7%), followed by companies with majority foreign ownership (25.4%) and majority state owned (15.9%). Companies in the sample are both manufacturing (82.5%) and non-manufacturing (17.5%).

3.2. Study results

3.2.1. Comparison of environmental performance

The paper analyses the link between ownership structure and corporate environmental performance. In other words, it focuses on the comparison among companies of different ownership type.

Environmental performance is presented by the following dimensions: (1) implementation of ISO 14000, (2) use of "Environmentally friendly" label, (3) device/equipment features and product/services features regarding prescribed technical environmental protection standards, (4) pollution level versus legal permissible limits, (5) environmental impact of products/services and production/business processes of companies versus their competitors, (6) company's environmental protection costs.

We conducted the analysis for three groups of companies: (1) majority privately owned companies, (2) majority state owned companies, (3) companies with majority foreign ownership.

By analyzing the implementation of international standard ISO 14000 by Croatian companies (as shown in Table 2), we can see that companies with majority foreign ownership demonstrated a progress in the implementation of ISO 14000. Among foreign companies, 43.8% implemented ISO 14000, 25% were in the preparatory phase and additional 18.8% of these companies considered implementing the standard. Among majority state owned companies, the distribution is slightly different: 30% of such companies implemented ISO 14000, 20% was in the preparatory phase while 30% was considering it. Only 16.2% of majority privately owned companies implemented ISO 14000. Among companies that were not considering implementing ISO 14000, the highest proportion of companies was majority state owned companies (20%). However, Chi-square showed that there is no statistically significant relationship between company ownership and implementation of ISO 14000, with Chi-square = 6.266 (Table 3).

Table 2: Implementation of environmental management system ISO 14000

Implementation of ISO 14000	Majority state owned companies	Majority privately owned companies	Companies with majority foreign ownership
Already implemented	30.0%	16.2%	43.8%
In the preparation phase	20.0%	29.7%	25.0%
In consideration	30.0%	43.2%	18.8%
Not in consideration	20.0%	10.8%	12.5%
Total	100.0%	100.0%	100.0%

Table 3: Chi-square Tests – Implementation of ISO 14000

	Value	df	Asimp. Sig. (2-sided)
Pearson Chi-Square	6.266[a]	6	0.394
Likelihood Ratio	6.217	6	0.399
Linear-by-Linear Association	1.454	1	0.228
N of Valid Cases	63		

[a] 8 cells (66.7%) have expected count less than 5. The minimum expected count is 1.27

After analyzing the usage of "Environmentally friendly" label for products (Table 4), we noticed that companies with majority foreign ownership were in a slightly better position compared to other two company groups. 12.5% of foreign companies, 10.8% of private companies and 10% of majority state owned companies had products with such a label. Chi-square test (Table 5) showed that there is no statistically significant relationship between company ownership and the use of "Environmentally friendly" label (Chi-square = 4.955).

Table 4: The usage of "Environmentally friendly" label

Products with eco-label ("Environmentally friendly")	Majority state owned companies	Majority privately owned companies	Companies with majority foreign ownership
Yes	10.0%	10.8%	12.5%
No	90.0%	81.1%	62.5%
Do not know		8.1%	25.0%
Total	100.0%	100.0%	100.0%

Table 5: Chi-square Tests – The usage of "Environmentally friendly" label

	Value	df	Asimp. Sig. (2-sided)
Pearson Chi-Square	4.955[a]	4	0.292
Likelihood Ratio	5.387	4	0.250
Linear-by-Linear Association	1.567	1	0.211
N of Valid Cases	63		

[a] 8 cells (66.7%) have expected count less than 5. The minimum expected count is 1.11

Table 6 shows device/equipment features regarding prescribed technical environmental protection standards. 25% of companies with majority foreign ownership had device/equipment features that were better than prescribed technical environmen-

tal protection standards, while there were 16.2% of such majority privately and 10% of such majority state owned companies (Table 4). Among majority privately owned companies, 10.8% of examined companies did not meet the prescribed technical environmental protection standards while there were no such majority state owned companies and those with foreign ownership. Chi-square test has shown that there is no statistically significant relationship among company sector and device/equipment features regarding prescribed technical environmental protection standards (Chi-square = 9.689 as shown in Table 7).

Table 6: Device/equipment features regarding prescribed technical environmental protection standards

Device/equipment features	Majority state owned companies	Majority privately owned companies	Companies with majority foreign ownership
Do no comply entirely to prescribed technical standards	0%	10.8%	0%
At requested levels of prescribed technical standards	70.0%	70.3%	75.0%
Better than prescribed technical standards	10.0%	16.2%	25%
Environmental protection standards are not prescribed	20.0%	2.7%	0%
Total	100.0%	100.0%	100,0%

Table 7: Chi-square Tests – Device/equipment features regarding prescribed technical environmental protection standards

	Value	df	Asimp. Sig. (2-sided)
Pearson Chi-Square	9.689[a]	6	0.138
Likelihood Ratio	9.773	6	0.135
Linear-by-Linear Association	0 .502	1	0.479
N of Valid Cases	63		

[a] 8 cells (66.7%) have expected count less than 5. The minimum expected count is 0.48.

By analyzing products/services features regarding prescribed technical environmental protection standards (Table 8), it is evident that they slightly differed among these three company groups. 31.3% of companies with foreign ownership and 29.7% of privately owned companies had products/services features that were better than the prescribed technical standard, compared to 22.2% of majority state owned companies. None of the companies stated to have products/services that did not comply with the set technical standards. Chi-square (Table 9) has shown that there is no statistically

significant relationship between company ownership and products/services features regarding prescribed technical environmental protection standards (Chi-square = 6.435).

Table 8: Products/services features regarding prescribed technical environmental protection standards

Products/services features	Majority state owned companies	Majority privately owned companies	Companies with majority foreign ownership
At the requested levels of prescribed technical standard	44.4%	59.5%	68.8%
Better than the prescribed technical standard	22.2%	29.7%	31.3%
Environmental protection standards are not prescribed	7.69%	20.00%	10.53%
No answer	0%	0%	0%
Total	100.0%	100,0%	100,0%

Table 9: Chi-square Tests – Products/services features regarding prescribed technical environmental protection standards

	Value	Df	Asimp. Sig. (2-sided)
Pearson Chi-Square	6.435[a]	4	0.169
Likelihood Ratio	6.932	4	0.140
Linear-by-Linear Association	3.737	1	0.053
N of Valid Cases	62		

[a] 5 cells (55.6%) have expected count less than 5. The minimum expected count is 1.02.

Levels of companies' air pollution are presented in Table 10. None of the companies in our sample stated that air pollution frequently exceeded the legal limit values. Out of the examined majority privately owned companies, 5.6% occasionally exceed the legal limit values, while none of the state owned and companies with majority foreign ownership stated the same. Among the examined state owned companies, 60.0% did not have air emissions at all, compared to 50.0% of such foreign and 44.4% of privately owned companies. Chi-square has shown that there is no statistically significant relationship between company sector and the level of company's air pollution emission, Chi-square = 2.021 (Table 11).

Table 10: The level of companies' air pollution

Air pollution	Majority state owned companies	Majority privately owned companies	Companies with majority foreign ownership
Occasionally exceeds the limit values	0%	5.6%	0%
Complies with recommended values	40.0%	50.0%	50.0%
No emission at all	60.0%	44.4%	50.0%
Total	100.0%	100.0%	100.0%

Table 11: Chi-square Tests – The level of companies' air pollution

	Value	df	Asimp. Sig. (2-sided)
Pearson Chi-Square	2.021[a]	4	0 .732
Likelihood Ratio	2.743	4	0.602
Linear-by-Linear Association	0 .062	1	0.803
N of Valid Cases	62		

[a] 5 cells (55.6%) have expected count less than 5. The minimum expected count is 0.32.

The levels of companies' water pollution were similar to the levels of companies' air pollution rates (see Table 12). Some 8.3% of the examined privately owned companies stated that the level of company's water pollution occasionally exceeded the limit values. None of the state owned and companies with foreign ownership stated the same. Out of the examined foreign companies, 81.2% complied with recommended values, while 18.8% had no emission at all. Majority of state owned companies (60.0%) had emissions within recommended values whereas 40% of these companies had no emission at all. Chi-square has shown that there is no statistically significant relationship between company sector and the level of company's water pollution emission, Chi-square=4.602 (Table 13).

Table 12: The level of companies' water pollution regarding company size

Water pollution	Majority state owned companies	Majority privately owned companies	Companies with majority foreign ownership
Occasionally exceeds the limit values	0%	8.3%	0%
Complies with recommended values	60.0%	55.6%	81.2%
No emission at all	40.0%	36.1%	18.8%
No answer	-	-	-
Total	100.0%	100.0%	100.0%

Table 13: Chi-square Tests – The level of companies' water pollution

	Value	Df	Asimp. Sig. (2-sided)
Pearson Chi-Square	4.602[a]	4	0.331
Likelihood Ratio	5.779	4	0.216
Linear-by-Linear Association	0 .916	1	0.339
N of Valid Cases	62		

[a] 4 cells (44.4%) have expected count less than 5. The minimum expected count is 0.48.

We asked the respondents to determine the impact of their products/services and production/business processes on the environment by comparing themselves to their competitors (Table 14 and 16).

Chi-square has shown that there is a statistically significant relationship between company sector and production/business process impact on the environment compared to their competitors. Chi-square =14.399, p=0,025, at 5% probability (Table 15). Foreign and privately owned companies demonstrated a better environmental impact of company's processes in comparison with privately owned companies. The highest proportion of companies with majority foreign ownership (35.7%) stated to have a better environmental impact of processes than majority of competitors, compared to 29.4% of such private and 12.5% of state owned companies. About a quarter of state owned companies considered the environmental impact of their process worse than that of the majority of their competitors, while the same was considered true by none of the foreign and privately owned companies. Among foreign companies 14.3% considered themselves worse than the competitor's average, while 8.8% of private companies considered the same.

Table 14: The environmental impact of company's processes compared to competitors – according to managers' perception

Impact level	Majority state owned companies	Majority privately owned companies	Companies with majority foreign ownership
Better than the majority of competitors	12.5%	29.4%	35.7%
Better than competitors' average	62.5%	61.8%	50.0%
Worse than competitors' average	0%	8.8%	14.3%
Worse than the majority of competitors	25.0%	0%	0%
No answer			
Total	100.0%	100.0%	100.0%

Table 15: Chi-square Tests – The environmental impact of company's processes compared to competitors

	Value	df	Asimp. Sig. (2-sided)
Pearson Chi-Square	14.399[a]	6	0.025
Likelihood Ratio	11.013	6	0.088
Linear-by-Linear Association	2.524	1	0.112
N of Valid Cases	56		

[a] 9 cells (75%) have expected count less than 5. The minimum expected count is 0.29.

The impact of company's products/services was similar to the impact of company's processes. 42.9% of the examined foreign companies stated to have products with better environmental impact than the majority of competitors, compared to 32.4% of such private companies and 12.5% of state owned companies. Additional 7.1% of companies with majority foreign ownership stated to have products/services with an environmental impact that was worse than the competitors' average and a quarter of state owned companies didn't answer the question. Chi-square has shown that there is a statistically significant relationship among company ownership and product/service influence on the environment compared to competitors, with Chi-square =16.955, p=0,009, at 1% probability (Table 17).

Table 16: The environmental impact of company's products/services compared to competition – according to managers perception

Impact level	Majority state owned companies	Majority privately owned companies	Companies with majority foreign ownership	Sum
Better than the majority of competitors	12.5%	32.4%	42.9%	32.1%
Better than competitors' average	62.5%	67.6%	50.0%	62.5%
Worse than competitors' average	-	-	7.1%	1.8%
No answer	25.0%	-	-	3.6%
Total	100.0%	100.0%	100.0%	100.0%

Table 17: Chi-square Tests – The environmental impact of company's products/services compared to competitors

	Value	Df	Asimp. Sig. (2-sided)
Pearson Chi-Square	16.955[a]	6	0.009
Likelihood Ratio	12.779	6	0.047
Linear-by-Linear Association	4.688	1	0.030
N of Valid Cases	56		

[a] 8 cells (66.7%) have expected count less than 5. The minimum expected count is 0.14.

We asked the respondents to rate the average proportion of different environmental protection costs in total costs (Table 18).

Table18: Average proportion of different environmental protection costs in total environmental costs

	State companies average	Private companies average	Foreign companies average	F	P-value
Average proportion of environmental protection costs in total costs	0.016%	0.348%	0.168%	0.432	0.652

3.2.2. Constraints that prevent companies from achieving better environmental impact

After analyzing environmental performance, we explored the constraints that prevent companies in achieving a better environmental impact. The respondents were asked to rate the basic constraints according to a scale from 1-7 (1-highest importance, 7-lowest importance). Average ranks for the examined companies are shown in Table 19.

Table 19: Average ranks given to constrains that prevent companies in achieving better impact to environment - **AN**OVA analysis

	State companies average	Private companies average	Foreign companies average	F	P-value
Lack of new clean technologies on the market	2.500	3.333	2.833	0.416	0.664
High costs of purchasing new clean technologies	2.400	2.542	2.125	0.254	0.777
Increased costs of new clean technologies	1.600	2.682	2.667	1.443	0.252
Insufficient demand for cleaner products	2.400	2.429	2.800	0.194	0.824
Weak government incentives	2.250	2.083	2.167	0.040	0.961
Company's orientation to other goals	2.333	3.467	3.000	0.582	0.568
Insufficient legislation	2.333	2.722	2.000	0.677	0.517

The examined majority state owned companies assigned the highest rank to increased costs of purchasing new clean technologies, followed by weak government incentives, insufficient legislation and company's orientation to other goals. Majority

privately owned companies assigned the highest rank to weak government incentives, followed by insufficient demand for cleaner products and high purchasing costs of new clean technologies. Companies with majority foreign ownership assigned highest rank to insufficient legislation, followed by high costs of purchasing new clean technology, and weak government incentives.

ANOVA analysis has shown that the differences among ranks are not statistically significant for any of the examined constraints that prevent companies from achieving better environmental impact according to ownership.

Average ranks for all examined companies are shown in Table 20. Among different constraints that prevent companies from achieving a better environmental impact the highest average rank was given to weak Government incentives. This was followed by high purchasing costs of new clean technologies, insufficient legislation and increased costs of use of new clean technologies.

Table 20: Descriptive statistics for ranks given to constrains that prevent companies in achieving better influence to environment –all companies

Constraint	N	Mean	Minimum	Maximum	Std.Dev.
Lack of new clean technologies on the market	30	2.800	1	7	1.606
High costs of purchasing new clean technologies	36	2.278	1	6	1.186
Increased costs of new clean technologies	33	2.333	1	5	1.109
Lack of funds needed to buy cleaner products	30	2.500	1	6	1.253
Weak government incentives	36	2.139	1	5	1.099
Companies' orientation to alternative goals	23	2.957	1	7	1.551
Insufficient legislation	28	2.286	1	5	1.117

3.2.3. Influence of environmentally friendly products on company attributes

We asked the respondents to evaluate the influence on certain company attributes of introducing environmentally friendly (EF) products according to Likert scale from 1 to 5 (1-reduction, 2-no change, 3-small increase, 4-moderate increase, 5-substantial increase). We analyzed the influence of EF products on the following company attributes: costs, product quality, production abilities, market share, profit, value added and image.

Respondents from companies with majority foreign ownership assigned higher marks to all company attributes in comparison with the other two company groups. Among foreign companies, the highest average mark was assigned to the influence

of EF products on image (4.45) which means a moderate to substantial influence on improving image. That mark was followed by the marks assigned to the influence on: quality (3.737), capabilities (3.632), market share (3.421), value added (3.400), costs (3.105) and revenue (3.053). These marks mean that the average influence of EF products on these company characteristics ranges from small to moderate.

Among state owned companies, the influence of EF products on image (3.5) got the highest mark, followed by the influence on quality (3.333), and on capabilities (3.0), which means that the introduction of EF products causes small to moderate improvement of image, quality and capabilities. The average influence of all other attributes was 2.667 (from no influence to a small increase). The order of three highest influences was the same among state owned companies as among companies with majority foreign ownership.

As regards private companies, an average mark higher than three (3.5) was assigned only to the influence on image (small to moderate influence on improving image). In all other characteristics, average marks were smaller than 3, which meant that the influence ranges from no influence to a small increase.

Findings that an average influence of introduction of EF products on costs is smaller than the influence on almost all other company attributes are encouraging. Among foreign companies, the only exception was the influence on revenue. Among state and private companies, the average influence on cost was the smallest, among private companies it was equal to the influence on quality, and among state companies it was equal to the influence on market share, revenue and value added.

Table 21: Average influence of environmentally friendly products on: costs, quality, production abilities, market share, profit, value added and image

	State companies average	Foreign companies average	Private companies average	F	P-value
Costs	2.667	3.105	2.375	1.104	0,346
Quality of products/ services	3.333	3.737	2.375	4.118	0.027*
Capabilities	3.000	3.632	2.714	1.806	0.184
Market share	2.667	3.421	2.500	1.856	0.176
Revenue	2.667	3.053	2.625	0.641	0.534
Value added	2.667	3.400	2.875	1.081	0.353
Image	3.500	4.450	3.500	3.277	0.052

* statistically significant at 5% probability

ANOVA analysis has shown that the differences among companies are statistically significant only in the influence of EF products on quality of products/services, at 5% probability. To determine which company groups differ, we tested these groups

with Post-hoc LSD test (Table 22). It showed that there was a statistically significant difference between foreign and private companies concerning quality, with 1% probability (p-value = 0.008).

Among foreign companies, the average influence of EF products on quality was 3.737 (influence ranges from small to moderate increase in quality) that was significantly higher than in private companies (2.714) where influence ranges from no influence to a small increase.

Table 22: Post-hoc LSD test

Quality of products/services	Majority state owned companies	Companies with majority foreign ownership	Majority privately owned companies
State owned companies	1.000		
Companies with foreign ownership	0.562	1.000	
Privately owned companies	0.219	0.008*	1.000

* statistically significant at 1% probability

4. CONCLUSION

In this paper, a comparison of environmental performance among companies of different ownership type in Croatia has been presented for the first time. Various examinations were performed to examine the hypothesis of the paper about differences in environmental performance among companies of different ownership type in Croatia.

Overall, the results indicate that there are no differences among ownership types in the majority of presented dimensions of environmental performance. According to our findings, our hypothesis can be only partially accepted. Statistically significant differences can be established among companies with majority foreign ownership, majority privately owned companies and majority state owned companies in two environmental dimensions: (1) product/services features regarding prescribed technical environmental protection standards and (2) device/equipment features regarding prescribed technical environmental protection standards. Foreign and private companies demonstrated better results in environmental impact of processes and products in comparison with state owned companies. The highest portion of companies that consider their processes and products better than the majority of their competitors is among foreign, followed by private companies. A quarter of state owned companies consider their processes worse than the majority of their competitors. A quarter of these companies didn't provide an answer about the impact of products/services while there are no such foreign and private companies.

Statistically significant differences cannot be found among these three groups of companies in the following dimensions: (1) implementation of ISO 14000, (2) use of

the "Environmentally friendly" label, (3) device/equipment features and product/services features regarding prescribed technical environmental protection standards, (4) pollution level versus legal permissible limits, (5) company's environmental protection costs. If we take a look ate the portion of companies that had the highest level of performances in these five dimensions we can see that foreign companies demonstrated slightly better results in comparison with two other company groups, even though the difference is not statistically significant. The largest proportion of foreign companies have already implemented ISO 14000 and produced products with eco-label, their device/equipment and product/services features has been better than legally prescribed and their level of air and water pollution has complied with the recommended values. If we consider the portion of companies that had the lowest level of performances in these dimensions we can see that state owned companies demonstrated slightly worse results concerning implementation of ISO 14000, usage of eco-label and product environmental features, while privately owned companies demonstrated slightly worse results concerning device equipment features and the level of air and water pollution.

Furthermore, there is no statistically significant difference among private, foreign and state companies when comparing the average proportion of environmental protection costs in total costs. Even though private companies spend a little more than foreign and state owned companies, the average proportion of different environmental protection costs in the companies' total costs is relatively small for all three company groups (less than 0.348%).

By observing the ranks of different obstacles that prevent companies from achieving better environmental impact, we can notice that weak government incentives was assigned the highest rank by privately owned companies, second rank by state, and third rank by foreign companies. Insufficient legislation was given the highest rank by companies with majority foreign ownership, and third rank by state owned companies. Such findings point out to the need for introduction of more demanding environmental legislation and various incentives like new forms of economic instruments in the area of environmental protection. High purchasing costs of new clean technologies was assigned the second rank by foreign and third rank by private companies. That emphasizes the need for development of different solutions in financing it. Insufficient demand for cleaner products was assigned the second rank by private companies. Hence, there is a need to increase market incentives, to improve quality/price ratio, as well as to introduce green marketing initiatives.

The influence of environmentally friendly (EF) product on certain company attributes shows that foreign companies demonstrate a better positive influence of EF products on all company attributes in comparison with the other two company groups. In all company groups, the highest influence of EF products is on improving their company image. This is followed by a positive influence on quality and a positive influence on capabilities among foreign and state owned companies. Among private companies, the highest positive influence on improving company image is followed by a positive influence on value added and capabilities. Influence assigned to costs is among the least pronounced positive influences, with the exception of foreign companies where the lowest positive influence is on revenue. These findings speak in favor of develop-

ment and introduction of EF products because EF products improve many company characteristics important to competitiveness.

These findings could be useful to academics in this area, to the Croatian Government, and practitioners that manage environmental performance. They can also serve to provide information to the public about Croatia's environmental performance. As there are not many studies that examine the connection between company ownership and environmental performance, future studies are will be needed to broaden knowledge in this area.

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PERFORMANSE ZAŠTITE OKOLIŠA HRVATSKIH PODUZEĆA S OBZIROM NA OBLIK VLASNIŠTVA

Sanda Rašić [2]

Sažetak

U svjetlu korporativne društvene odgovornosti, uspjeh poduzeća određuje se ne samo njegovim ekonomskim performansama, veći i socijalnim performansama te performansama zaštite okoliša. Vrijednosno utemeljen menadžment zaštite okoliša unapređuje performanse zaštite okoliša i poslovnu izvrsnost.

Svrha rada je istražiti postoje li razlike u performansama zaštite okoliša između poduzeća koja imaju različiti oblik vlasništva u Hrvatskoj (privatno, državno i strano), usporediti glavne prepreke u ostvarenju boljih performansi zaštite okoliša te istražiti utjecaj okolišu prijateljskih proizvoda na važne karakteristike poduzeća.

U okviru sekundarnih istraživanja, konzultirana je relevantna literatura koja pokriva ovo područje. U okviru primarnog istraživanja, provedena je studija na uzorku od 350 hrvatskih poduzeća pri čemu su vraćena 63 upitnika. Statistička analiza provedena je uz pomoć programa SPSS 13.0., a poduzeća su uspoređena uz pomoć Hi-kvadrat testa i ANOVA analize.

Nalazi pokazuju da među hrvatskim poduzećima s različitim oblikom vlasništva nema razlika u većini performansi zaštite okoliša. Statistički značajna razlika može se uspostaviti samo za eko značajke proizvoda/usluga i eko značajke uređaja/opreme. Najveće prepreke u ostvarenju boljih performansi zaštite okoliša su: slab poticaj državne uprave, visoki troškovi nabave nove „čistije" tehnologije, neadekvatna zakonska regulativa i povećani proizvodni (operativni) troškovi „čistije" tehnologije. S obzirom na utjecaj eko proizvoda na različite atribute poduzeća, pokazalo se da je najveći utjecaj eko proizvoda na poboljšanje imidža.

Ključne riječi: *performanse zaštite okoliša, oblik vlasništva, Hrvatska*

JEL klasifikacija:Q51

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