COMPARISON OF THE TYPES OF CORPORATE ENVIRONMENTAL STRATEGIES

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ABSTRACT

The article describes the evolution of sustainable development as one of the greatest transformational phenomena in the last few decades. To fit the sustainable development orientation, companies started to develop their corporate social responsibility and create environmental strategies. The aim of the article is to present and compare different types of environmental strategies that could be placed within the continuum from a reactive to a proactive approach. Four environmental corporate strategies are explained: pollution control, pollution prevention, development of environmentally friendly products, and development of environmentally friendly technologies. The article describes the main features environmental strategies, which refer to: stakeholder orientation, characteristics of technology base, the range of required environmental investment, environmental costs, possible environmental improvements, expected resource productivity increase, integration of environmental aspects into the main business activities, and time frame orientation. Furtherly, the article examined the integration of the four main types of environmental strategies into the corporate strategy of Croatian companies. The differences concerning the size, industry sector, export orientation, and ISO certification are analysed. The article ends with a discussion and concluding remarks, explaining the environmental strategy's benefits and limitations. Potentials for environmental improvements in these strategies are emphasized.

KEY WORDS

environmental strategy, reactive, proactive, Croatia

CLASSIFICATION

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INTRODUCTION

The evolution of sustainable development, along with the information revolution, is assumed to be the greatest transformational phenomenon that has occurred since the agricultural and industrial revolution – it is a movement of individuals, organizations, and societies toward long-term improvement in environmental quality and socioeconomic systems [1]. To meet the goals of sustainable development (environmental, social, and economic) sustainable use of resources and coexistence of humans and other species in harmony with nature is needed [2]. Sustainable development requires a healthy biosphere, stabilization of the world's population, intra-generational and inter-generational equality, universal human rights, addressing social and economic poverty, and addressing the energy future [3]. The basic values of sustainable development are numerous: survival (meeting the physical and psycho-emotional needs of living systems); resilience to stresses (physical and psycho-emotional recovery from damage and adjustment); efficiency (elimination of waste of resources and efforts – natural, human, temporal, and relational); protection, preservation, and restoration (integration and harmonization of relations with the environment); inclusiveness (care for nature and other stakeholders, including future generations), connectedness, justice, prudence; security (global, national, local, employment, elimination of violence, justice) [4].

Following the need for sustainability, companies have begun to take a more active role to maintain fit with the environment. Environmental fit is defined as the dynamic alignment and adaptation of the firm with the resilience of the ecosystem where it is embedded, preserving ecosystem health, and assuring the provisioning of ecosystem services on which the firm depends [5]. To this end, more and more attention is paid to the development of knowledge and methods to increase resource productivity, material circulation, and recycling, reduce material and energy consumption, waste, emissions, noise, preserve biodiversity, etc. Environmental protection become an important element of corporate strategy.

The article starts with the definitions of environmental strategy and two main environmental strategic approaches. In the third section, four types of environmental strategies are explained and compared regarding their main features. The potentials and limitations of the main types of environmental strategies are emphasized and discussed in the discussion and conclusion section.

REACTIVE VS. PROACTIVE APPROACH IN ENVIRONMENTAL STRATEGY

Corporate environmental strategy is defined as a strategy of a firm to manage the relations between corporate operations and the natural environment [6]. It shows how environmental aspects are integrated into strategic management [7]. The corporate environmental strategy includes the incorporation of environmental aspects into business decisions that refers to product development, technology, R&D and design, new business, and plant location [7-9].

Despite the different means for assessing corporate environmental strategies, several corporate approaches can be explained, and are placed in the continuum from the denial or rejection of environmental protection, reactive strategy, toward proactive strategies [6, 10]. Some companies operate by neglecting environmental issues, some take the reactive approach aimed to clean and remove pollution, while others take the preventive approach with inclusion of environmental protection into various aspects of their strategy.

Within the reactive strategy, organization responds to external drivers mainly environmental legislation and shareholder requirements through defensive lobbying and investment in "end of pipe" technologies. On the other side, there is a proactive strategy, motivated either by external drivers or internal motives, which is oriented on the prevention of negative environmental impacts [6] and the creation of positive impacts. Within a proactive approach, three types of

environmental strategy can be identified: pollution prevention, development of environmentally friendly products/services, and development of environmentally friendly technologies [11].

MODALITIES OF CORPORATE ENVIRONMENTAL STRATEGIES

POLLUTION CONTROL STRATEGY

Pollution control strategy which is part of the reactive approach, aims to deal with the pollution after it occurs. This strategy is based on "end-of-pipe" technologies related to additional technical installation for environmental protection, such as emission control or waste treatment by various chemical, physical and biological processing to translate waste/emissions into a form that could be dischared into the environment. The pollution control strategy includes cleaning, treating, storing, handling, filtration, and remediation of waste and pollution. The primary resources and solutions for the pollution control strategy are [12]: filters for controlling pollution release, refrigerators, condensers, thermal and catalytic combustion, incinerators to deal with pollution and waste; wastewater treatment plants, sound-reducing agents, etc. These technical installations usually operate independently of the production process or are partly added to the production facilities. Pollution control treatments usually need expensive equipment to control and remove pollution. To manage pollution control techniques employees does not need to develop new knowledge and abilities, but use existing knowledge to find protective solutions.

Although the implementation of a pollution control strategy is useful and simple, such reactive measures leave companies at a similar technological environmental level because the main instrument of environmental protection is end-of-pipe. What many companies with reactive approach neglect is that the use of such technology leads to high consumption of materials and energy, capital expenditures, and increased working time to compensate for fundamentally inefficient processes [12]. Therefore, this strategy can hide the potential to improve productivity and exploit market opportunities. It can lead to problems with stakeholders and an inability to meet future regulatory pressures, which in turn might deteriorate competitiveness.

Table 1. Features of the pollution control strategy.

Stakeholder orientation	Owners, investors, and regulators (at a national, regional, and local levels)
Technology base	End-of-pipe (cleaning, filtering, treating, handling, remediation of waste/pollution, reduction of the noise and vibrations, etc.)
Environmental investment	Relatively low, oriented to pollution control
Environmental improvement	Relatively low, at the output stage
Productivity of resources	Relatively low
Environmental cost	High direct environmental costs
Integration of environmental aspect	Individual company (mainly on process level)
Time frame	Short-term

Table 1 shows the main characteristics of the pollution control strategy that are previously explained. Pollution control strategy, which is part of the reactive approach, is often based on the asumption that there are divergent interests and conflicts between the company and external stakeholders (social community, governmental and non-governmental organizations, mass media, customers, etc.). The focus is on the needs of owners and investors so that strategies are motivated mainly by environmental legislation and other external drivers such as media and public pressure. Environmental investment is relatively low and is focused on environmental improvements that are usually not significant and that are integrated into the final stages of production/operations ("end of pipe"), Environmental protection is integrated at the process level of the individual company. Direct environmental costs are high, caused by various

chemical, physical and biological processing needed to translate waste/emissions into a form suitable for release into the environment. Time frame orientation is short-term.

POLLUTION PREVENTION STRATEGY

Unlike a pollution control strategy, that acts in the final stages of the production/operational process, the pollution prevention strategy requires minimizing or eliminating pollution and waste before it is generated – in the initial operational/production stages or during the production/operational processes. Pollution prevention considers ways to replace harmful materials and use a closed-loop system to reduce pollution and ensure Health&Safety. In many respects, pollution prevention is based on the principles of Total Quality Management, which requires extensive employee involvement and continuous improvement in emission prevention, rather than relying on costly pollution control technology. Pollution prevention efforts include more efficient use of resources and energy, converting by-products and waste as outputs from one process into inputs to the same or other processes, eliminating the need for hazardous materials that are difficult to handle, eliminating unnecessary activities, better process control, recycling, reuse, etc. By preventing pollution, companies can make significant savings and decrease direct environmental costs. The costs of installing and operating the "end-of-pipe" technologies can be avoided, the productivity of production/operational processes could be enhanced, inputs can be better utilized, and the costs of raw material and waste disposal could be lower. Pollution prevention could reduce the production cycle time by simplifying or eliminating unnecessary steps in production/operations. Pollution prevention strategy could allow to reduce emissions well below the legally required levels, reduce the costs associated with the regulatory framework as well as meet the requirements of different stakeholders. Therefore, a pollution prevention strategy could create the base for a cost advantage over competitors, which in turn might improve the cash flow and profitability in the future [11].

The main features of the pollution prevention strategy are presented in Table 2. Companies that follow this strategy usually consider multiple stakeholders such as owners, investors, managers, employees, regulators, the community, natural environment. Environmental investment is medium to high, oriented to pollution prevention techniques that will enable elimination of harmful substances, more efficient use of resources and energy, circulation, recycling, reuse, etc. The introduction of these principles leads to higher resource productivity. Consequently, direct environmental costs are lower in comparison to the pollution control strategy. Environmental aspects are integrated mainly at the process level of the individual company. Time frame orientation is medium-term to long-term taking into account future requirements as well.

Table 2. Features of the pollution prevention strategy.

Stakeholder orientation	Owners, investors, regulators (regional, national, local level), managers, employees, community, natural environment
Technology base	Efficient use of resources/energy, elimination of hazardous materials and unnecessary activities, better process control, process circulation, recycling, reuse
Environmental investment	Medium to high (oriented to pollution prevention)
Environmental improvement	Medium to high – at the input stage, process stage (cycling, recycling, reuse…)
Productivity of resources	Medium to high
Environmental cost	Low to medium direct environmental costs
Integration of environmental aspect	The individual company (mainly on the process level)
Time frame	Medium-term to long-term

STRATEGY OF DEVELOPING ENVIRONMENTALLY FRIENDLY PRODUCTS

Environmentally friendly (eco) products are those that minimize the negative impact on the environment during the whole product life cycle. Therefore, the strategy of developing environmentally friendly products goes beyond the pollution prevention strategy, seeking to minimize undesired environmental impact at all stages of the product value chain. The such strategy focuses on redesigning existing products/services or developing new products/services whose materials/components, production, distribution, and usage reduce or eliminate pollution, consumption of resources and energy, and whose components can be collected, recovered, recycled, and/or reused. The basis is to achieve efficient use of materials, reduce the use of toxic materials, increase the use of renewable or recycled materials, simplify design, improve energy efficiency, integrate waste into the recirculation system, etc.

For the strategy of developing environmentally friendly products is necessary to have technical skills and knowledge in the area of environmental protection regarding production systems, materials, and components [13]. At the same time, it is useful to integrate various stakeholders within and outside the organization in the process of product design. Technical staff, environmental experts, customers, and sometimes community representatives could be included. The exchange of by-products between companies within the supply chain can help to recycle materials on a wider scale, which in turn reduces resource consumption and improves their efficiency [14].

Management interventions in areas such as Design for the environment, Eco-branding, Product life cycle management, and Supply chain management are part of the strategy of environmentally friendly product development that can strengthen competitiveness and bring significant benefits.

Well-managed development of environmentally friendly products/services can help to reduce costs and add value to products/services. It can also serve as a source of first-mover competitive advantage, differentiation competitive advantage, or value innovation competitive advantage [15].

Table 3. Features of the strategy of developing environmentally friendly products (eco-products).

Stakeholder orientation	Owners, investors, regulators (regional, national, local level), managers, employees, customers, business partners, local community, natural environment (global, regional, national, local)
Technology base	Development of environmentally friendly products - whose materials, components, production, distribution, and use reduce/eliminate pollution and resource/energy consumption, which have a simpler design, whose components can be collected, recovered, recycled, reused
Environmental investment	Medium to high (oriented to environmentally friendly products)
Environmental improvement	Medium to high
Productivity of resources	Medium to high
Environmental costs	Low to medium direct and indirect environmental costs
Integration of environmental aspect	Along the whole supply chain
Time frame	Medium-term to long-term

Characteristics of the strategy of environmentally friendly product development are presented in Table 3. Such a strategy considers multiple stakeholders, including customers and other partners in the supply chain. Environmental investments are usually medium to highly oriented to the development of products that will eliminate negative environmental impact within the product life cycle. Environmental improvement of products is often medium to high rather than small, and it should lead to higher resource productivity. Direct environmental costs (costs that are occurred at the level of the individual company) and indirect environmental costs (costs

occurred at the level of distributors, customers, transporters, suppliers, etc.) are intended to be lower. Environmental issues are integrated into the main business functions such as operations, procurement, product design, research and development, legal affairs, marketing and sales, human resource management, etc. along the whole supply chain. Time frame orientation is medium-term to long-term as such an approach considers future requirements.

STRATEGY OF DEVELOPING ENVIRONMENTALLY FRIENDLY TECHNOLOGY

The strategy of developing environmentally friendly technology is expected to be the most advanced and go beyond all previously described proactive strategies. It emphasizes not only minimizing the impact on the environment of processes or products, but also the development of future technologies that will be completely environmentally friendly.

The existing technologies in many industries are not environmentally sustainable in the long term and therefore significant investments are being made to create a technological shift toward sustainability. This strategy includes the development of new technologies with low or zero-emission, without negative impact on the environment, considering the social impact of business operations and engagement with stakeholders [16]. Following this type of strategy is especially important in industries that traditionally have the highest negative impact on the environment (chemical, power energy, metal, processing, etc.) where there are still not adequately accepted solutions. This strategy requires technological cooperation between various stakeholders such as government and corporations, etc., to build appropriate technological infrastructure, develop human resources, and foster competitiveness by modern environmentally friendly technologies. The strategy of developing environmentally friendly technology seeks to improve environmental performance throughout the whole value chain, entering into cooperation not only with commercial partners but with other stakeholders, striving to be one step ahead of regulatory requirements [12].

Success in following the strategy of developing environmentally friendly technology could transform the company into the industry leader that sets standards for the entire sector and bring the best practices in addressing complex issues such as climate change, natural resource depletion [12], pollution, etc. By adopting this strategy, the organization shows that it is fully oriented toward sustainability, becoming an ethical and authentic economic entity, capable of achieving economic, environmental, and social goals and ensuring growth through the rational allocation of resources [1]. Environmentally friendly technologies generate changes not only in companies, but also in their environment, i.e. within existing socio-cultural norms and institutional structures [18].

Table 4 shows the main characteristics of the strategy of developing environmentally friendly technology. This type of strategy respects the needs of all stakeholders. Creating new clean technologies requires the highest investment but should bring valuable environmental improvements

Table 4. Features of the strategy of developing environmentally friendly technology (eco-technology).

Stakeholder orientation	All stakeholders
Technology base	New environmentally friendly technologies (especially in industries that have been traditional polluters)
Time frame	Long-term
Environmental improvement	High (oriented to the development of clean technologies)
Productivity of resources	High
Environmental costs	Low direct, indirect and opportunity environmental costs
Integration of environmental aspect	From supply chains to multiple industries and wider economy
Environmental investment	High

that will replace outdated dirty technologies. Such clean technologies are expected to enhance resource productivity and significantly reduce direct, indirect and opportunity environmental costs. This strategy enables environmental protection aspects are integrated not only within the supply chain but transferred to other industries as well. Time frame orientation is long-term as it is focused on the sustainable future. Such strategies have great value as they enable sustainable development to become truly achievable.

EMPIRICAL STUDY ON THE TYPES OF CORPORATE ENVIRONMENTAL STRATEGIES IN CROATIAN COMPANIES

This study used a quantitative research methodology to explore the integration of the four main types of environmental strategies into corporate strategy of Croatian companies, and differences among environmental strategies regarding the company size, industry sector, export orientation and implementation of ISO standard.

METODHOLOGY OF RESEARCH

The research sample was determined as a random stratified sample of 200 Croatian companies from various industry sectors. Using the step method, $k = N$ (population)/n (sample), with a randomly selected start determined by a number between 1 and k, using a table of random numbers, the companies were selected into the sample. A well-structured questionnaire was created using Google Forms and distributed to respondents (corporate board member/director/department officer) via e-mail. The first part of the questionnaire examined the type of environmental strategies that is included in the corporate strategy. Respondents were asked to indicate the type of environmental strategy that is integrated in the corporate strategy of their company, using a five-point Likert scale from 1 to 5 (1 – completely disagree, 5 – completely agree), according to their opinion. Four types of corporate environmental strategies were analysed: pollution control, pollution prevention, developing environmentally friendly products (eco-products), developing environmentally friendly technology (eco-technology) [11, 22]. The second part included questions regarding respondents' demographics (age, gender, educational level, position) as well as organizational characteristics (size, export orientation, industry sector, ISO certification). 57 organizations participated in the research.

RESEARCH RESULTS

Integration of the various types of environmental strategies into the corporate strategy of the analysed companies are shown in Table 5. It can be seen that approximately the same proportion of respondents agree or completely agree with all four statements regarding the type of environmental strategies that are integrated into their company's corporate strategy.

Table 5. Integration of the types of environmental strategies integrated into corporate strategy.

	Completely disagree	Disagree	Neither agree nor disagree	Agree	Completely agree	Total
Pollution control		5%	5%	44%	46%	100%
Pollution prevention			5%	47%	48%	100%
Developing eco-product		7%	14%	49%	30%	100%
Developing eco-technology	2%	5%	18%	47%	28%	100%

Table 6 presents descriptive statistics for variables related to the type of corporate environmental strategy of the organizations from the sample. The highest average score is given to two variables: Environmental strategy is integrated in corporate strategy as a pollution control strategy (average score 4,30), and Environmental strategy is integrated in the corporate strategy as a pollution prevention strategy (average score 4,42). The other two variables have

slightly lower average scores: Environmental strategy is integrated in the corporate strategy as a strategy of developing eco-products (average score 4,02), and Environmental strategy is integrated in the corporate strategy as a strategy for developing eco-technology (average score 3,95). Cronbach's alpha indicator is higher than 0,7, i.e. 0,885, which means that mentioned variables can be used in further analysis.

Table 6. Descriptive statistics for the types of environmental strategies integrated into corporate strategy.

	N	Minimum	Maximum	Mean	Std. Dev.	Cronbach's alpha
Pollution control	57,00	2,00	5,00	4,30	0,80	0,885*
Pollution prevention	57,00	3,00	5,00	4,42	0,60	
Developing eco-products	57,00	2,00	5,00	4,02	0,86	
Developing eco-technology	57,00	1,00	5,00	3,95	0,91	

*Cronbach's alpha >0,700

Table 7 shows the variables used to measure the type of environmental strategy integrated into corporate strategy according to the Kolmogorov-Smirnov test of normality of distribution. The results of the Kolmogorov-Smirnov test indicate that the distribution of the variables used in the sample differs from the normal distribution at the 1% significance level, for all observed variables, which indicates that the variables should be compared using a non-parametric test.

Table 7. Kolmogorov-Smirnov test of normality of the variables used to measure the types of environmental strategies integrated into corporate strategy.

		Pollution control	Pollution prevention	Developing eco-products	Developing eco-technology
N		57,00	57,00	57,00	57,00
Normal Parameters	Mean	4,30	4,42	4,02	3,95
	Std. Dev.	0,80	0,60	0,86	0,91
Most Extreme Differences	Absolute	0,27	0,31	0,28	0,28
	Positive	0,19	0,29	0,21	0,20
	Negative	-0,27	-0,31	-0,28	-0,28
Test Statistic		0,27	0,31	0,28	0,28
Asymp. Sig. (2-tailed)		0,000***	0,000***	0,000***	0,000***

***statistically significant at 1% probability

Table 8 shows descriptive statistics for variables related to the type of environmental strategies integrated into corporate strategy concerning company size.

It can be noted that respondents from small and medium-size companies agree most with the variable: Environmental strategy is integrated in the corporate strategy as a pollution prevention strategy (average score 4,35). Respondents from the small and medium-size organizations agree least with the variable: Environmental strategy is integrated in the company's strategy as a strategy for developing eco-products (average score 3,71). Respondents from large organizations also agree most with the variable: Environmental strategy is integrated in the corporate strategy as a strategy of pollution prevention (average score 4,45). Respondents from large organizations agree least with the variable: Environmental strategy is integrated in the corporate strategy as a strategy of developing eco-technology (average score 3,98).

For all variables, regardless of whether they are small and medium-sized, or large organizations, the standard deviations range from 0,55 to 0,97, so it can be concluded that the average ratings are representative.

In order to investigate whether the differences found between the types of environmental strategies regarding the company size are statistically significant, a Mann-Whitney test was conducted, Table 9. The test results show that none of the four variables is statistically significant (Pollution control: p-value: 0,551; Pollution prevention: p-value: 0,723; Developing eco products: p-value: 0,073; Developing eco technology: p-value: 0,536).

Table 8. The types of environmental strategies integrated into corporate strategy – with regard to company size.

Company size		Pollution control	Pollution prevention	Developing eco- products	Developing eco- technology
Small and medium-size	Mean	4,29	4,35	3,71	3,88
	Std. Dev.	0,59	0,70	0,92	0,78
	N	17,00	17,00	17,00	17,00
Large	Mean	4,30	4,45	4,15	3,98
	Std. Dev.	0,88	0,55	0,80	0,97
	N	40,00	40,00	40,00	40,00
Total	Mean	4,30	4,42	4,02	3,95
	Std. Dev.	0,80	0,60	0,86	0,91
	N	57,00	57,00	57,00	57,00

Table 9. Mann-Whitney test on the types of environmental strategies integrated into corporate strategy – with regard to company size.

	Pollution control	Pollution prevention	Developing eco-products	Developing eco- technology
Mann-Whitney U	309,00	322,00	245,00	307,00
Wilcoxon W	462,00	475,00	398,00	460,00
Z	-0,60	-0,35	-1,80	-0,62
Asymp. Sig. (2-tailed)	0,551	0,723	0,073	0,536

Table 10 shows descriptive statistics for variables related to the type of environmental strategies integrated into the corporate strategy of companies by industry sector.

It can be noted that the average ratings of variables for companies within the primary and secondary sectors are above 4. Respondents from companies in the primary and secondary sectors mostly agree with the variable Environmental strategy is integrated in the corporate strategy as a pollution prevention strategy (average rating 4,50). The average ratings of variables for companies within the tertiary and quaternary sectors are somewhat lower, especially for variables: Environmental strategy is integrated in the corporate strategy as a strategy of developing eco-products, and Environmental strategy is represented in the corporate strategy as a strategy of developing eco-technology (lower than 4). Respondents from organizations within the tertiary and quaternary sectors also mostly agree with the variable: Environmental strategy is integrated in the company's strategy as a pollution prevention strategy (average rating 4,29). Respondents from organizations within the tertiary and quaternary sectors agree least (average score 3,86) with the variables: Environmental protection strategy is integrated in the company's strategy as a strategy of developing eco-products and Environmental strategy is integrated in the company's strategy as a strategy of developing eco- technology.

For all variables, regardless of the sector, the standard deviations range from 0,46 to 0,96, which indicates that the average scores are representative.

To investigate whether the differences between the types of corporate environmental strategies integrated into corporate strategy regarding the industry sector were statistically significant, the Mann-Whitney test was conducted, Table 11. The test results show that none of the four variables is statistically significant (Pollution control: p-value: 0,147; Pollution prevention: p-value: 0,093; Developing eco-products: p-value: 0,390; Developing eco-technology: p-value: 0,505).

Table 12 shows descriptive statistics for variables related to the types of environmental strategies integrated into corporate strategy concerning export orientation. It can be noted that the average scores for all four environmental strategies in the companies oriented to the European market and the global market are above 4. The highest average score for the variable

Table 10. The types of environmental strategies integrated into corporate strategy – with regard to the industry sector.

		Pollution control	Pollution prevention	Developing eco-products	Developing eco-technology
Primary and secondary sector	Mean	4,42	4,50	4,11	4,00
	Std. Dev.	0,73	0,65	0,78	0,93
	N	36,00	36,00	36,00	36,00
Tertiary and quaternary sector	Mean	4,10	4,29	3,86	3,86
	Std. Dev.	0,89	0,46	0,96	0,91
	N	21,00	21,00	21,00	21,00
Total	Mean	4,30	4,42	4,02	3,95
	Std. Dev.	0,80	0,60	0,86	0,91
	N	57,00	57,00	57,00	57,00

Table 11. Mann-Whitney test of the types of environmental strategies integrated into corporate strategy – with respect to industry sector.

	Pollution control	Pollution prevention	Developing eco-products	Developing eco-technology
Mann-Whitney U	298,50	288,00	330,00	340,50
Wilcoxon W	529,50	519,00	561,00	571,50
Z	-1,45	-1,68	-0,86	-0,67
Asymp. Sig. (2-tailed)	0,147	0,093	0,390	0,505

Environmental strategy is integrated in the corporate strategy as a pollution prevention strategy is given in companies oriented to the European market (average score 4,35), and to the global market (average score 4,54). In companies that are oriented to the national market, the lowest average scores are given to the variables: Environmental strategy is integrated in the corporate strategy as a strategy of developing eco-products (average score 3,92) and Environmental strategy is integrated in the corporate strategy as a strategy of developing of eco-technology (average score 3,88). For all variables, regardless of export orientation, the standard deviations range from 0,52 to 1,12 based on which it can be concluded that the average ratings are representative.

Table 13 shows the Kruskal-Wallis test on the type of environmental strategy integrated into corporate strategy concerning export orientation. The results show no statistically significant difference for any variable (Pollution control: p-value: 0,663; Pollution prevention: p-value: 0,755; Developing eco-products: p-value: 0,601; Developing eco-technology: p-value: 0,912).

Table 12. The types of environmental strategies integrated into corporate strategy – with regard to export orientation.

		Pollution control	Pollution prevention	Developing eco-products	Developing eco-technology
National market	Mean	4,25	4,42	3,92	3,88
	Std. Dev.	0,85	0,58	0,78	0,95
	N	24,00	24,00	24,00	24,00
Market of European countries	Mean	4,30	4,35	4,10	4,00
	Std. Dev.	0,66	0,67	0,79	0,86
	N	20,00	20,00	20,00	20,00
Global market	Mean	4,38	4,54	4,08	4,00
	Std. Dev.	0,96	0,52	1,12	1,00
	N	13,00	13,00	13,00	13,00
Total	Mean	4,30	4,42	4,02	3,95
	Std. Dev.	0,80	0,60	0,86	0,91
	N	57,00	57,00	57,00	57,00

Table 13. Kruskal-Wallis test on the types of environmental strategies integrated into corporate strategy – with regard to export orientation.

	Pollution control	Pollution prevention	Developing eco-products	Developing eco-technology
Kruskal-Wallis H	0,82	0,56	1,02	0,19
Df	2,00	2,00	2,00	2,00
Asymp. Sig.	0,663	0,755	0,601	0,912

Table 14 shows descriptive statistics for variables related to the type of environmental strategy integrated into corporate strategy concerning the ISO certification. It can be noted that the average scores for all four variables in organizations certified with the ISO standard are above 4. The variables have almost the same average score: Environmental strategy is integrated in the corporate strategy as a pollution prevention strategy (average score 4,48), and Environmental strategy is integrated in the corporate strategy as a pollution control strategy (average score 4,43). The average scores of variables for companies that are not certified by the ISO standard are somewhat lower, especially for the variables: Environmental strategy is integrated in the corporate strategy as a strategy of developing eco-products, and Environmental strategy is integrated in the corporate strategy as a strategy of developing eco-technology (lower than 4). Respondents from companies not certified by the ISO standard also largely agree with the variable: Environmental strategy is integrated in the corporate strategy as a pollution prevention strategy (average score 4,39). For all variables, regardless of the sector, the standard deviations range from 0,51 to 0,95, which suggests that the average scores are representative.

Table 14. The types of environmental strategies integrated into corporate strategy – with regard to the ISO certification.

		Pollution control	Pollution prevention	Developing eco-products	Developing eco-technology
With ISO certification	Mean	4,22	4,39	3,89	3,81
	Std. Dev.	0,83	0,64	0,89	0,95
	N	36,00	36,00	36,00	36,00
Without ISO certification	Mean	4,43	4,48	4,24	4,19
	Std. Dev.	0,75	0,51	0,77	0,81
	N	21,00	21,00	21,00	21,00
Total	Mean	4,30	4,42	4,02	3,95
	Std. Dev.	0,80	0,60	0,86	0,91
	N	57,00	57,00	57,00	57,00

To investigate whether the differences in the integration of the types of environmental strategies into corporate strategy, with respect to ISO certification, are statistically significant, a Mann-Whitney test was conducted, Table 15. The test results show that none of the four variables is statistically significant (Pollution control: p-value: 0,329; Pollution prevention: p-value: 0,737; Strategy of developing eco-products: p-value: 0,125; Strategy of developing eco-technology: p-value: 0,114).

Table 15. Mann-Whitney test of the integration of the types of environmental strategies into corporate strategy – with respect to ISO certification

	Pollution control	Pollution prevention	Strategy of developing eco products	Strategy of developing eco technology
Mann-Whitney U	324,50	360,00	292,50	289,00
Wilcoxon W	990,50	1026,00	958,50	955,00
Z	-0,98	-0,34	-1,53	-1,58
Asymp. Sig. (2-tailed)	0,329	0,737	0,125	0,114

DISCUSSION

The need for sustainable development, including various external drivers and internal incentives, motivate companies to integrate environmental concerns into their business. Environmental concern has been incorporated into the main activities within the supply chain networks and influences corporate decisions and activities [19]. Environmental protection has become an integral part of corporate strategy that will help them to improve their corporate social responsibility.

By classifying environmental strategies into reactive and aggressive categories based on companies' responses to environmental challenges, certain studies conclude that reactive and proactive environmental strategies are important "in mediating the effects of corporate environmental responsibility on economic and environmental sustainability" [20].

This article explains environmental strategies that can range from a reactive response (oriented to pollution control) to preventive involvement where the company becomes the creator of eco-innovations, eco-products, and advanced eco-technologies, or even becomes the leader in these processes.

Among the different types of environmental strategies, the reactive strategy approach is given lower importance in the literature. Such a strategy seeks to minimize costs and reduce environmental investment, hiding not only environmental inadequacy but also economic unproductiveness and inefficiency. However, it should be noted that there are examples of good practices in pollution control strategies. For example, innovations that enable certain types of waste to be transformed into usable and valuable things that can be returned to the same or another operational process. Such positive examples stretch the pollution control strategy closer to the principles of the circular economy.

Compared to the pollution control strategy, the pollution prevention strategy is considered to be more environmentally acceptable because it finds solutions at earlier stages or during the process cycle (operations) to reduce/eliminate the causes of pollution or waste, improve utilization of material/energy, and enable circulation of materials, resources, components, and parts. Although it requires investment into process eco-modernization, the pollution prevention strategy helps to increase resource productivity which leads to a reduction in direct environmental costs.

The strategy of the developing environmentally friendly products goes further because the environmental concern is extended throughout the whole product life cycle, crossing the boundaries of only one organization. In this strategy, the environmental issues are addressed throughout the product life cycle, requiring collaboration with other organizations linked in the supply chain. It requires setting the closed-loop at the end of the product life cycle that enables circulation. This strategy aims to exploit market potential by targeting segments of environmentally responsible consumers and to build environmental competitive advantages, such as first-mover advantage, differentiation, or value innovation.

The most advanced proactive strategy is the development of environmentally friendly technology. This strategy offers the highest potential to solve environmental problems and achieve sustainable development. Such a strategy usually requires radical technological changes, especially in industries that traditionally had the highest negative environmental impact. Without radical changes in these technologies, no significant environmental improvements can be expected globally. Strategic goals with this strategy are the most difficult to achieve, often requiring high investment and a longer payback period. It is based on fundamental and radical research, a multidisciplinary approach, and cooperation with various stakeholders. At the same time, environmentally friendly technologies could generate changes

not only in companies that develop them but also in whole industries and beyond i.e. within existing socio-cultural norms and institutional structures [18]. Therefore, it is not surprising that this strategy has the greatest value. Successful implementation of such strategic approach enables a company to create a strong market position that competitors hardly reach because they would have to imitate the whole new technology and the whole range of activities, not just one sustainability initiative [21].

Empirical study conducted in this article among Croatian companies shows that the highest percentage of respondents agreed or highly agreed that all types of environmental strategies are integrated in their company's corporate strategy. The highest average mark was assigned to the pollution prevention strategy (4,42), and pollution control strategy (4,3). These two environmental strategies represent two basic stages in strategy development, so not surprisingly, these strategies had the highest average marks. A slightly lower average mark was assigned to the strategy of developing eco-products (4,02). This strategy is mainly created for products with relatively high market demand. Additionally, such a strategy requires cooperation with various partners in the supply chain and does not depend on just one company. The lowest average mark is assigned to the strategy of developing eco-technology (3,95). The creation and implementation of such a strategy is most difficult. It requires sophisticated resources, skills and competence, cooperation with industry partners and other stakeholders within the wider environment. Regarding the results on the types of environmental strategies integrated into corporate strategy, concerning company size, industry sector, export orientation, and ISO certification, this study showed that none of these variables was statistically significant.

CONCLUSION

It can be concluded that Croatian companies simultaneously create various types of environmental strategies, from pollution control to developing eco-technology, and integrate them into corporate strategy. Additionally, no statistically significant difference was found in integrating environmental strategies into corporate strategy regarding size, industry sector, export orientation, and ISO certification. The possible reason could be that companies recognize the value of a smart environmental strategies for achieving sustainability, regardless of their size, type of industry, export orientation, or ISO certification. Creative environmental strategy can help the company achieve numerous benefits such as improvement of image, knowledge and human capital, innovation, productivity, and competitiveness while maintaining profitability, especially when considering a long time frame and future needs.

It is important to emphasize that no unique environmental strategy is suitable for solving all environmental problems in all types of industries and businesses. When formulating environmental strategies, organizations should take into account the context of the broader business environment in which they operate. Additionally, the company has to assess the internal environment – organizational unique resources, capabilities, and competencies. Furthermore, the success of the chosen environmental strategies will depend on the skills, commitment, and creativity of managers and other key employees thriving to find smart sustainability solutions. Emphasis on the contingent nature of resources and capabilities helped scholars to establish links between financial performance and environmental performance, especially in the identification of a wide range of resources and capabilities that influence the company's ability to achieve success on a financial level, or on an environmental level [22].

Future studies in the area of environmental strategy could furtherly investigate and classify various types of environmental strategies, their components, processes, features, potentials, and applications, as well as their influence on various dimensions of company performance.

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