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CURRENT ACTIVITIES FOR QUALITY AND NATURAL ENVIRONMENT TAKEN BY SELECTED ENTERPRISES BELONGING TO SMES FROM THE ELECTROMECHANICAL INDUSTRY

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Purpose: The purpose of the article is to present results of pilot studies from survey research of small and medium enterprises (SMEs) from the electromechanical industry of the countries of the Visegrad Group, i.e.: Poland, the Czech Republic, Slovakia, and Hungary.
Design/methodology/approach: As subject of research selected SMEs from electromechanical industry. Survey research was quantitative in nature. They were conducted in a written and electronic way using the MS FORMS platform.
Findings: In recent years, issues related to nature protection have become more and more priority for small and medium enterprises from the electromechanical industry of Visegrad countries. This is mainly due to the updated way of managing organisations and the increasing emphasis on the use of sustainable development tools. This pressure is exerted by competition but also by customers. It turned out that today it is not enough to ensure high quality of products, but in order to achieve the basic goals of the organisation, it is also necessary to invest in sustainable development. However, there is resistance in this area, related to awareness and costs.
Research limitations/implications: The article included initial research. In the future, the next research is planned in this area.
Originality/value: The article presented an analysis of the pilot survey research of approach to quality and environmental issues in SMEs. The article refers to enterprises from one industry, i.e.: the electromechanical industry of Visegrad Group - Poland, the Czech Republic, Slovakia and Hungary. The conclusions from the research are important for national SMEs and organisations that support the development of this sector.

Keywords: sustainable development, quality, natural environment, making decisions, SMEs, Visegrad Group.

Category of the paper: Research paper.

1. Introduction

Today, sustainable development becomes more important theme for enterprises and all society (Pimenowa et al., 2023; Rodrigues, Franco, 2023; Saqib et al., 2023). In the face of challenges related to the degradation of natural resources, climate change and environmental pollution, more and more companies from various industries are starting to take action to protect the natural environment (Liu, Liu, Li, 2023; Nulkar, 2014; Pacana, Siwiec, Bednárová, 2020). Sustainable development and essential product quality are closely related to each other (Siwiec, Pacana, 2021; Siwiec, Pacana, Gazda, 2023; Szabó et al., 2023). In the context of production and consumption, sustainable development has requirements production and consumption of goods and services in a manner consistent with social, economic and environmental requirements (Jaiswal, 2014; Olejarz, Siwiec, Pacana, 2022; Yasir et al., 2023). All these factors have an impact on the development of the company. Among these companies, a special role has numerous enterprises from the electromechanical industry, mainly small and medium enterprises (SMEs), which are approximately 98% and which increasingly come into contact with initiatives taken for sustainable development (Pinget, Bocquet, Mothe, 2015; Mishra, Choudhury, Rao, 2019). In this context, it is advisable to look at the activities undertaken by a sample of companies from the electromechanical industry belonging to the Visegrad Group, in order to assess their plans and real contribution to environmental protection.

The Visegrad Group, which consists of four countries: Poland, the Czech Republic, Slovakia, and Hungary (Braun, 2019), is a region in which many enterprises form the electromechanical industry. As part of this group, many enterprises take different initiatives and actions to reduce the negative impact of their activities on the natural environment and ensure the sustainable development of their companies and the region (Kużelewska, Bartnicki, 2017).

In the article, the focus is on enterprises from the electromechanical industry belonging to SMEs, which are operating in the area of Visegrad Group, and promoting or taking concrete initiatives and activities to protect the natural environment. These enterprises were subjected to preliminary surveys. The use of the survey was influenced by the fact that surveys are the most widely used research tool that allows you to collect reliable information from respondents on a specific topic. It is planned to collect questionnaires in both written and electronic form. Thanks to the survey, data on the opinions, behaviour, preferences, and needs of the respondents were obtained, which allows for a more accurate understanding of the studied phenomenon and making the right decisions. On the basis of the collected and analysed data, it was pointed out

what goals were set for these enterprises, what specific actions were taken to achieve these goals, and what benefits for the natural environment and for the companies themselves result from these actions. Such actions may be the *use of modern technologies, the limitation of energy demand, the implementation of an environmental management system, and the promotion of environmental awareness among workers and local society.* A separate issue of the analysis was potential benefits resulting from environmental protection activities and challenges for enterprises in the implementation and maintenance of activities related to sustainable development.

2. Methods

In the period from March to April 2023, preliminary surveys were conducted among enterprises belonging to the electromechanical industry from the Visegrad Group countries - Poland, the Czech Republic, Slovakia and Hungary. There were SMEs enterprises. The conducted research was in aim to analyse the current elected activities for the quality and natural environment taking by selected companies belonging to the electromechanical industry. The research was carried out by survey research in an electronic way (MS FORMS) and in a paper version. The survey fragment from MS FORMS is shown in Figure 1.

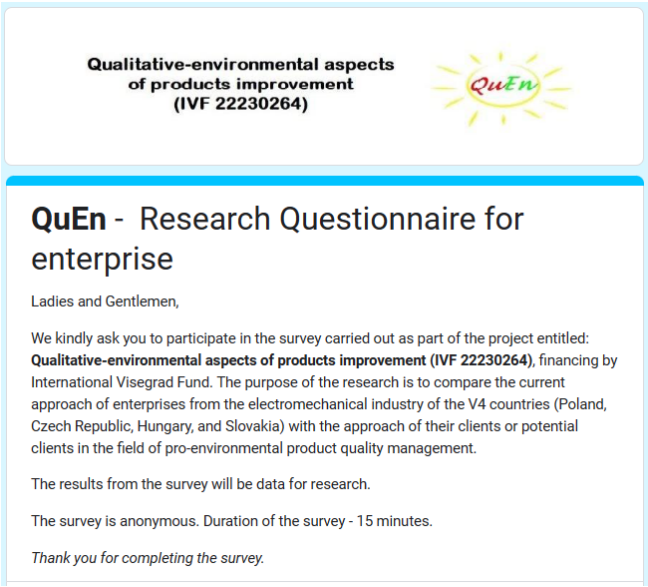

Figure 1. Fragment of a research survey in MS FORMS.

The survey included eight questions on the survey data sheet and thirty-six questions in the essential part. The survey was developed based on the literature review, for example (Benito-Hernandez et al., 2023; Bryła, 2020; Jerzyk, 2015; Wysocki, 2018; Saqib et al., 2023), and after initial pilot research (conceptual - verifying conception), which results are shown in the studies,

that is: (Siwiec et al., 2022; Hajduk-Stelmachowicz et al., 2022). The survey questionnaire included single- and multiple-choice questions, including questions with the possibility of indicating other (own) answers. From the conducted surveys 16 out of 36 questions were selected that refer to current activities for the quality and natural environment of SMEs enterprises from the electromechanical industry. The selected questions are shown in Table 1.

Table 1.
Selected questions form questionnaire of research survey

How often actions to improve products' quality are taken in the enterprise?				
1 – they are not taken	2 – less than once every three years	3 – once every two to three years	4 – once a year	5 – more than once year
How often action to improve products' quality, but considering customers' expectations are taken in the enterprise?				
1 – they are not taken	2 – less than once every three years	3 – once every two to three years	4 – once a year	5 – more than once year
How often in the enterprise actions to compare the quality of products with the quality of the same types of competitive products are taken?				
1 – they are not taken	2 – less than once time year	3 – once every two to three years	4 – once a year	5 – more than once year
How often action to improve products' quality including its impact on the natural environment are taken in the enterprise?				
1 – they are not taken	2 – less than once every three years	3 – once every two to three years	4 – once a year	5 – more than once year
What is the degree of customers' expectations which have an impact on the pro-environmental improvement of products?				
1 – very low	2 – low	3 – average	4 – high	5 – very high
How often actions to compare competing products in terms of their environmental impact are taken in the enterprise?				
1 – they are not taken	2 – less than once every three years	3 – once every two to three years	4 – once a year	5 – more than once year
Is the enterprise planning investment in pro-ecological solutions in the next three years?				
Yes				
No (go to the question no. 23)				
What pro-environmental activities does your company implement?				
❑ adherence to environmental principles as part of the sustainable development				
❑ applying a dilution or filtering strategy				
❑ applying preventive environmental strategies (recycling or prevention strategies)				
❑ participation in Cleaner Production Program				
❑ implementation of technological eco-innovations (concerning new products or processes)				
❑ implementation of non-technological eco-innovations (concerning organizational or marketing solutions)				
❑ use of ecological labels (eco-labels), ecological certificates (FSC, Blue Angel, Ecolabel), environmental declarations on e.g. raw materials, materials, products, packaging				
❑ use of environmentally friendly additive technologies (“end of pipe”)				
❑ use IPPC Directives and BAT guidelines				
❑ eco-design				
❑ eco-product				
❑ minimization of waste in production processes				
❑ recycling				
❑ creating "green" alliances with other entities with common ecological goals in mind				
❑ creating green supply chains				
❑ training, education, raising awareness				
❑ other, what?.....				
❑ none				

Cont. table 1.

What principles are used in the process of pro-ecological product design taking into account the product life cycle (LCA)?				
❑ achieving environmental efficiency ❑ saving resources and using available renewable resources ❑ increased product durability ❑ design for reuse ❑ designing with material recycling in mind ❑ design for disassembly ❑ minimization of harmful substances ❑ environmentally friendly production ❑ reducing the impact of the product on the environment during use ❑ use of environmentally friendly packaging ❑ disposal of non-recyclable materials ❑ use of environmentally friendly logistics ❑ other, what?..... ❑ none				
Why do you not intend to invest in pro-ecological solutions?				
❑ lack of funds for investments ❑ lack of knowledge/know how, experience ❑ investment already made ❑ unprofitable investment ❑ the infrastructure (e.g. premises, building) does not belong to the company ❑ the enterprise is too small for pro-ecological activities ❑ there is no place for pro-ecological solutions in our business ❑ hard to say ❑ others that				
How often does the company take steps to improve the quality of its products while taking care of the natural environment?				
1 – not at all	2 – rarely	3 – sometimes	4 – often	5 – very often
To what extent does the need to care for the natural environment affect the activities undertaken in the company when improving the quality of products?				
1 – very low	2 – low	3 – average	4 – high	5 – very high
Define the company's current approach to taking actions aimed at improving the quality of products in terms of quality and the environment				
❑ improving the quality of products is definitely more focused on achieving the quality of products that satisfy customers than on reducing the negative impact on the natural environment ❑ improving the quality of products is definitely more focused on reducing the negative impact on the natural environment than on achieving the quality of products that satisfy customers ❑ improving the quality of products is aimed at reducing the negative impact on the natural environment as well as at achieving the quality of products that satisfies customers ❑ none of the above statements is true, because in the company improving the quality of products is focused on (please complete the sentence) ……				
What quality and environmental measures are taken by the company to improve the quality of its products?				
❑ activities are undertaken separately, taking into account customer requirements as to the quality of products and taking into account the impact of products on the natural environment ❑ activities are undertaken simultaneously taking into account customer requirements as to the quality of products and taking into account the impact of products on the natural environment ❑ other, i.e.:				

Cont. table 1.

Indicate only those activities that are implemented in the company as part of improving products in terms of quality and environment
❑ specification of products catalogs are being developed
❑ catalogs describing the impact of products on the natural environment are being developed
❑ a catalog of activities aimed at improving the quality of products is kept
❑ surveys of customer satisfaction with the quality of products are conducted
❑ satisfaction surveys of customers and interested parties are conducted regarding the impact of products on the natural environment
❑ computer software is used to support making quality and/or environmental decisions as a part of the product improvement, i.e. ……
❑ other, i.e. ……
Indicate the actions that are the most difficult when improving products and/or reducing their negative impact on the environment
❑ selection of quantitative criteria (technical, measurable)
❑ selection of quality criteria (subjective, immeasurable)
❑ selection of pro-ecological criteria
❑ determination of changes in products required by customers
❑ determining the rank (catalogue of criteria importance) ensuring an increase in customer satisfaction
❑ determination of the rank (catalogue of importance of criteria) ensuring care for the natural environment
❑ defining a group of criteria that will increase customer satisfaction while having a pro-environmental impact
❑ others, i.e. ……

Within two months, a relatively small research sample was obtained, consisting of no more than 51 questionnaires from SMEs companies from the electromechanical industry for each partner from the Visegrad Group (Poland, Czech Republic, Slovakia and Hungary). There were 30 surveys from Poland, 12 surveys from Czech Republic, 8 surveys from Slovakia, and 1 survey from Hungary. Despite that, the obtained sample sizes were not comparable and possible to statistical justification, in view of the character of the initial research, there were considered enough to formulate initial conceptions.

Based on the answers provided in the records, it was concluded that most of the enterprises (17) were located in the city of 150 000 to 500 000 residents, then in the city of 20 000 residents (13), and relatively similar in the rural area (11). These were mainly medium-type companies (18) and had an international range of activities (38). They operated in the electromechanical industry area belonging to the electrotechnical and electronic area (12), means of transport (11), and also, for example, metal, machine, or precise industry. The vast majority of enterprises (28) declared that they have implemented the ISO 9001:2015 system. In case of ISO 14001:2015, answers were relatively similar, and shown on implemented this system (18), and simultaneously no implementation (18), where slightly fewer respondents from these enterprises (12) pointed out that does not know whether the system has been implemented. However, in the case of the organisational and legal form, these were general partnerships (18) and partnerships (18), mostly limited liability companies (27). The analysis of survey research conducted on selected questions from the essential part has been shown in the next part of the study.

3. Results

The results of the survey research obtained in enterprises in the electromechanical industry of the countries of the Visegrad Group (Poland, Czech Republic, Slovakia and Hungary). Initially, questions related to the frequency of actions as part of products were analysed and their impact on the natural environment. The summary number of answers obtained to analyse companies from the Visegrad Group countries and the percentage of these answers are shown in Table 2.

Table 2.
Selected results of initial survey research from enterprises of electromechanical industry from Visegrad Group countries (Poland, Czech Republic, Slovakia and Hungary)

No.	Question	Number of all responses on the Likert scale					Percentage of total Likert responses [%]				
		1	2	3	4	5	1	2	3	4	5
1	How often actions to improve products' quality are taken in the enterprise?	1	2	6	7	34	2	4	12	14	68
2	How often action to improve products' quality, but considering customers' expectations are taken in the enterprise?	1	3	5	12	29	2	6	10	24	58
3	How often in the enterprise actions to compare the quality of products with the quality of the same types of competitive products are taken?	5	9	6	10	20	10	18	12	20	40
4	How often action to improve products' quality including its impact on the natural environment are taken in the enterprise?	5	7	7	13	19	10	14	14	25	37
5	What is the degree of customers' expectations which have an impact on the pro-environmental improvement of products?	3	8	18	15	7	6	16	35	29	14
6	How often actions to compare competing products in terms of their environmental impact are taken in the enterprise?	11	5	11	15	9	22	10	22	29	18

Firstly, answers refer to frequency making actions to product quality improvement were analysed. Most of the companies in these countries (68%) reported that their actions are made more than once a year. Simultaneously, more than half of the countries of the Visegrad Group (58%) confirmed that these actions include the expectations of customers. Then, the frequency of actions to compare the quality of products with the quality of the same types of competitive products were analysed. Analysing summarical all responses of companies from researched countries of Visegrad Group, it was found that these actions take place more than once a year (58%). The largest number of these answers provided by enterprises from Czech Republic (7 from 12) and Poland (11 from 30).

Then, it was analysed how often actions to improve product quality, including its impact on the natural environment, are taken in the enterprises. Most of the electromechanical industry companies surveyed (37%) indicated that they did it more than once a year. Slightly fewer responses (25%) indicated that this is done once a year. The enterprises from Czech Republic declared that it is more than once a year (7 from 12), enterprises from Slovakia and Hungary relatively similar that more than once a year, once a year, or once every two/three years. In turn, the highest number of responses from Polish enterprises related that it is once or more often a year (9-10 out of 30). The next analysed issue was the degree of customer expectations, which has an impact on the pro-environmental improvement of products in enterprises from the electromechanical industry from selected countries of the Visegrad Group. The largest number of all responses from researched enterprises show that this impact is average (35%), where little less answers show high impact (29%). The responses of the enterprises from the individual countries of the Visegrad Group surveyed could also be determined in a similar way. Referring to the next question, most of these enterprises (29%) declared that once a year making actions to compare competing products in terms of their environmental impact are taken in the enterprise. Except that, slightly less responses (22%) indicated that these actions are taken once every two to three years or at all. In individual countries, the number of responses was distributed similarly between these responses, with the vast majority of Poland companies (9 out of 30) indicating that they do not engage in such activities at all.

Later, pro-environmental activities undertaken by the Visegrad Group countries (Poland, Slovakia, Czech Republic, Hungary) were analysed. The cumulative number of responses is shown in Figure 2.

It was shown, that the most frequently undertaken pro-ecological activities by researched enterprises were: recycling (12%), minimization of waste in production processes (11%), and training, education, raising awareness (10%), the same percentage of responses (8%) were given for:

- use of ecological labels (eco-labels), ecological certificates (FSC, Blue Angel, Ecolabel), environmental declarations on e.g. raw materials, materials, products, packaging,
- creating "green" alliances with other entities with common ecological goals in mind,
- implementation of technological eco-innovations (concerning new products or processes).

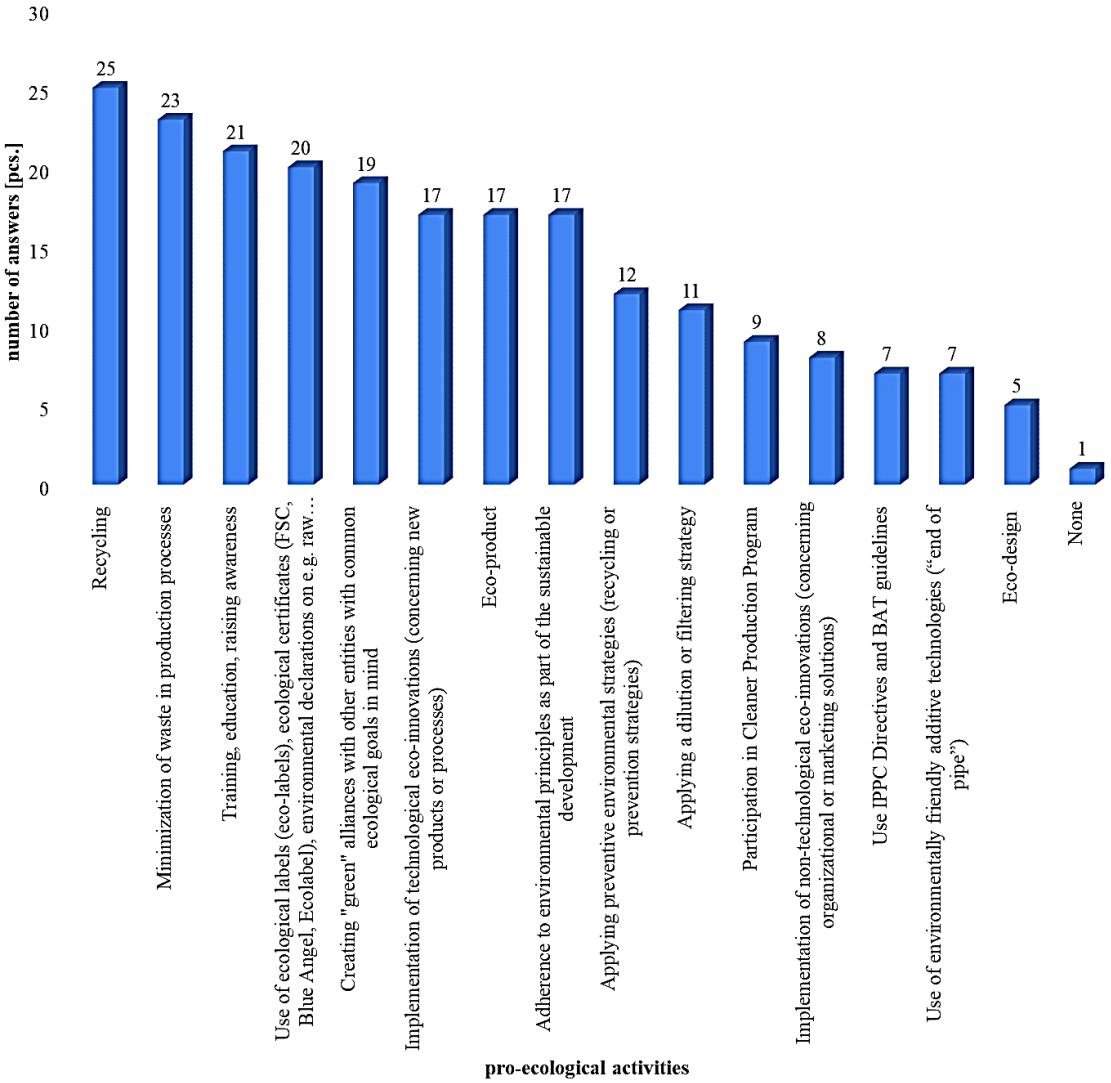

Figure 2. Pro-environmental activities implemented by companies from electromechanical industry in Visegrad Group countries (Poland, Czech Republic, Slovakia and Hungary).

Other indicated pro-ecological actions were for example: eco-product, adherence to environmental principles as part of the sustainable development, applying preventive environmental strategies (recycling or prevention strategies), or applying a dilution or filtering strategy.

Then, the answers regarding the rules applied by the surveyed enterprises in the electromechanical industry of selected countries in the Visegrad Group were verified. These principles refer to the process of pro-ecological product design taking into account the product life cycle (LCA). The cumulative results of the research companies from the Visegrad Group countries (Poland, Czech Republic, Slovakia and Hungary) are shown in Figure 3.

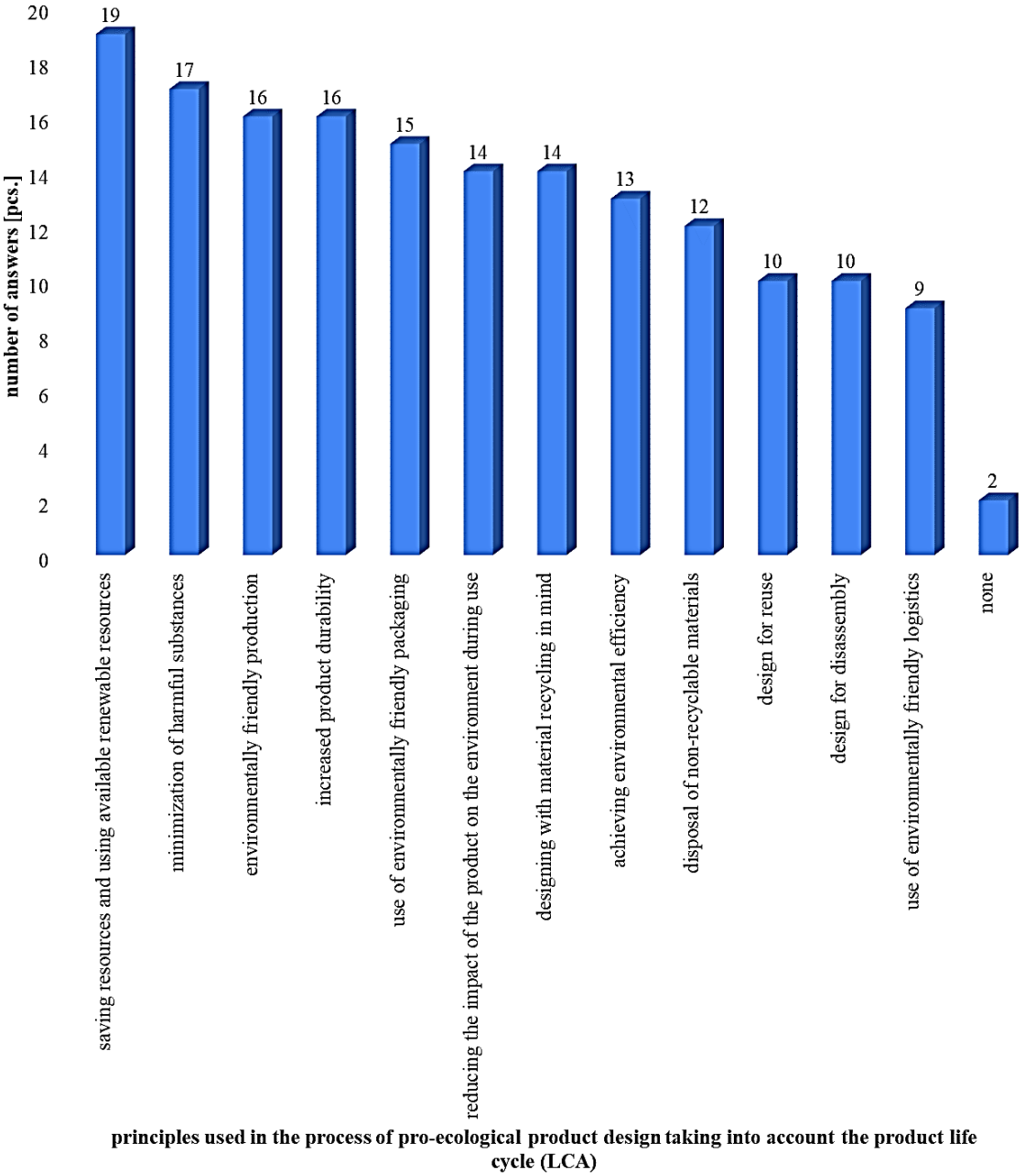

Figure 3. Principles used in the process of pro-ecological product design taking into account the product life cycle (LCA) making by selected enterprises from Visegrad Group countries.

The electromechanical industry enterprises analysed from Visegrad Group countries mostly indicated that the principles used in the process of preparing the pro-ecological product taking into account the product life cycle (LCA) are first of all:

- saving resources and using available renewable resources (11%),
- minimization of harmful substances (10%),
- environmentally friendly production (10%),
- increased product durability (10%),
- use of environmentally friendly packaging (9%),

- reducing the impact of the product on the environment during use (8%),
- designing with material recycling in mind (8%),
- achieving environmental efficiency (8%).

The other principles indicated were for example: design for reuse, or disposal of non-recyclable materials.

Then, it was asked if the companies plan investment in pro-ecological solutions in the next three years. The vast majority (63%) declared that they were planning such solutions. Later, the companies were asked why they did not intend to invest in pro-ecological solutions. The result of the responses obtained from all the companies surveyed from the countries of the Visegrad Group is presented in Figure 4.

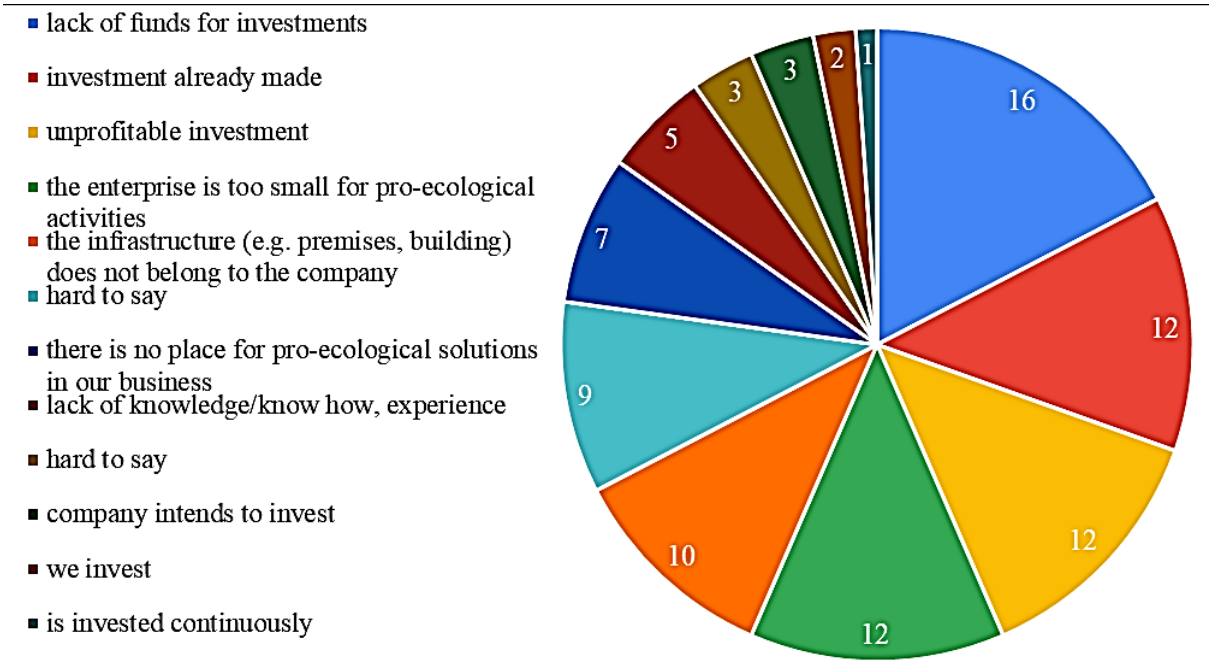

Figure 4. Main causes about not intend to invest in pro-ecological solutions in selected enterprises of Visegrad Group countries (Poland, Czech Republic, Slovakia and Hungary).

Based on the visualisation presented of the answers obtained, it was concluded that the main reasons (16 or 12 out of all answers) that conditioned the lack of investment in pro-ecological solutions in selected companies of the Visegrad Group countries were: (i) lack of funds for investments, (ii) unprofitable investment, and (iii) the company is too small for pro-ecological activities. A similar number of responses were given by enterprises declaring that they had already invested in pro-ecological solutions.

The next of the questions, which were verified, is shown in Table 3. The table also contains the number of responses obtained and their percentage share of all the responses provided by the analysed companies in the electromechanical industry of the countries of the Visegrad Group.

Table 3.
Selected results of initial survey research from enterprises of electromechanical industry from Visegrad Group countries (Poland, Czech Republic, Slovakia and Hungary)

No.	Question	Number of all responses on the Likert scale					Percentage of total Likert responses [%]				
		1	2	3	4	5	1	2	3	4	5
1	How often does the company take steps to improve the quality of its products while taking care of the natural environment?	2	9	14	16	10	4	18	27	31	20
2	To what extent does the need to care for the natural environment affect the activities undertaken in the company when improving the quality of products?	5	5	23	16	2	10	10	45	31	4

The electromechanical industry enterprises analysed from the Visegrad Group countries (Poland, Slovakia, the Czech Republic, Hungary) clearly indicated that they often (31%)/ sometimes (27%) take action to improve the quality of their products while caring for the natural environment. Furthermore, the majority of enterprises (45%) declared that the need to care for the natural environment influences the activities carried out in the company to improve the quality of the products to an average degree.

Subsequently, the current approach of enterprises from selected countries in the Visegrad Group to taking actions aimed at improving the quality of products in terms of quality and environment has been discussed. The vast majority of companies (61%) indicated that improving the quality of products in their company is aimed at reducing the negative impact on the natural environment as well as achieving the quality of products that satisfy customers. Half of the responses (33%) were the statement that improving the quality of products is definitely more focused on achieving the quality of products that satisfy customers than on reducing the negative impact on the natural environment. The fewest answers (6%) were concerned with the statement that improving the quality of products is definitely more focused on reducing the negative impact on the natural environment than on achieving the quality of products that satisfy customers.

Subsequently, the need to determine the quality and environmental activities carried out by the surveyed companies to improve the quality of their products was examined. A comparable number of responses (nearly 50%) indicated that:

- activities are undertaken separately, taking into account customer requirements as to the quality of products and taking into account the impact of products on the natural environment, and
- activities are undertaken simultaneously taking into account customer requirements as to the quality of products and taking into account the impact of products on the natural environment.

In turn, in the case of actions performed by enterprises as part of improving products in view of qualitative-environmental, relatively often indicated that:

- surveys of customer satisfaction with the quality of products are conducted (28%),
- specification of products catalogs are being developed (26%),
- satisfaction surveys of customers and interested parties are conducted regarding the impact of products on the natural environment (20%),
- computer software is used to support making quality and/or environmental decisions as a part of the product improvement (15%),
- a catalog of activities aimed at improving the quality of products is kept (9%).

In addition, it was indicated that computer software is used to support quality and/or environmental decision making as part of product improvement (2%).

The last of the questions selected as part of this analysis was to determine the activities that are the most difficult when improving products and/or reducing their negative impact on the environment. The number of responses obtained and their percentage share of all responses provided by verified enterprises in the electromechanical industry of the countries of the Visegrad Group (Poland, Czech Republic, Slovakia, Hungary) are presented in Table 4.

Table 4.
Selected results of initial survey research from enterprises of electromechanical industry from Visegrad Group countries (Poland, Czech Republic, Slovakia and Hungary)

Question	Number of responses and their share %
selection of quantitative criteria (technical, measurable)	24 (20%)
determination of changes in products required by customers	21 (18%)
selection of quality criteria (subjective, immeasurable)	20 (17%)
selection of pro-ecological criteria	16 (14%)
determination of the rank (catalogue of importance of criteria) ensuring care for the natural environment	13 (11%)
determining the rank (catalogue of criteria importance) ensuring an increase in customer satisfaction	13 (11%)
defining a group of criteria that will increase customer satisfaction while having a pro-environmental impact	11 (9%)

The most difficulties activities during improving products and / or reducing their negative impact on the natural environment according to enterprises of the electromechanical industry of countries of the Visegrad Group were: selection of quantitative criteria (technical, measurable) (20%) and similarly determination of changes in products required by customers (18%) and selection of quality criteria (subjective, immeasurable) (17%).

4. Conclusions

The Visegrad Group of countries consists of the Czech Republic, Poland, Slovakia, and Hungary. In recent years, companies in these countries have taken various measures to improve quality and protect the environment. This is mainly due to the need to be competitive, to introduce an updated way of managing organisations, and the increasing emphasis on the use of sustainable development tools. This pressure is exerted not only by competitors, but also by customers. It turned out that today it is not enough to ensure high quality of products, but in order to achieve the basic goals of the organisation, it is also necessary to invest in sustainable development. There is resistance in this area, however, related to awareness, but also costs. Activities in this area are varied. Therefore, it seemed advisable to conduct research showing relations in this respect within similar countries of the Visegrad Group. The article contains the results of preliminary research and their analysis, as well as pilot conclusions. On the basis of 51 completed questionnaires, it was found that most of the companies were located in a city with a population of 150,000 to 500,000 inhabitants. These were mainly medium-sized enterprises (18) and internationally active (38). Most of the surveyed enterprises declared that they had implemented the ISO 9001:2015 system, and slightly less than half of the ISO 14001:2015 system. The analysis of the results of the survey conducted on selected questions showed that the vast majority of companies in the countries of the Visegrad Group (68%) carry out quality-orientated activities more often than once a year. It was similar in the case of declaring activities within the improvement of products, taking into account their impact on the natural environment. The organisations surveyed most often described the degree of impact of customer expectations on the pro-environmental improvement of products as average (35%), but slightly fewer responses indicated a high impact (29%). As part of the analysis of the results obtained, it turned out that the most common pro-ecological activities undertaken by the surveyed enterprises were recycling and waste minimisation in production processes (11%), followed by training, education, and raising awareness (9%). Other pro-environmental activities indicated include, for example, eco-design or compliance with environmental principles as part of sustainable development. In the case of the analysis of the applied rules, it turned out that practically all rules are implemented to the same extent in the functioning of the surveyed enterprises. In the case of companies limiting investments in sustainable development, the following were most often cited as the reason: lack of funds for financing, claiming that it is an unprofitable investment, and claiming that the company is too small for pro-ecological activities. The companies analysed also indicated that they take relatively often measures to improve the quality of their products while caring for the natural environment. However, the vast majority of companies admitted that they were taking actions to improve the quality of products in terms of quality and environment. Furthermore, based on the results of the survey, it can be concluded that these activities are combined,

although not in all enterprises and not necessarily at a high level of sophistication. As part of the research, it was additionally shown that computer software is used, albeit to a small extent, to support quality and/or environmental decision making. The most difficult part of improving products and/or reducing their negative impact on the environment turned out to be the selection of quantitative criteria and specifying changes in products required by customers. This fact may warrant further targeted research.

In summary, companies in Visegrad countries undertake various activities for the sake of quality and environmental protection. These activities are not homogeneous and are at the same level of participation. Therefore, it is advisable to continue the research to perhaps observe trends and dependencies that will allow the formulation of the principles of qualitative and ecological improvement of enterprises.

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