

STRESZCZENIE W JĘZYKU ANGIELSKIM – SYNOPSIS

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FACULTY OF MANAGEMENT

Ph. D. dissertation

**ENVIRONMENTAL MANAGEMENT IN SMALL
AND MEDIUM-SIZED ENTERPRISES OF ŚLĄSKIE
VOIVODESHIP**

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Within only two centuries, the functioning of societies has changed dramatically. It was mainly due to the new possibilities brought by the industry development, changes in worldviews, new socio-political ideas or scientific discoveries, as well as a drastic increase in the population. These changes have multiplied production, consumption and, associated with them, the amount of waste, emissions and pollution. They also have created a demand for completely new products or services. Modern society is becoming more and more consumerist, and the desire to possess goods causes continuous rise of anthropogenic pressure on the environment. As a result of such an intensified human activity, the effects associated with environmental degradation cannot longer be ignored or downplayed. After many years of worldwide discussion on the need for protecting the environment, the approach to the use of natural resources has gradually evolved. The current standard is the concept of sustainable development. It assumes that the integration of political, economic and social activities will create the opportunity to meet the basic needs of contemporary and future generations. In order to implement the idea of the sustainable development into the comprehensive way, all branches of the economy and social life should be subordinated to its assumptions. In particular, the approach to energy and resources consumption needs to be rationalized. Therefore, it is necessary to transform an old type of enterprise into a sustainable organization what demands crucial change of the awareness of entrepreneurs and stakeholders.

The organizations of the sector of small and medium enterprises (SMEs) must play a key role in this transformation because they are the core of both, the European and Polish economies. Thus, it is important for SMEs to abandon the business models, which only focus on economic goals, for those in which the management process covers all aspects of companies' functioning, including environmental impacts. It is significant to implement elements of environmental management into the overall enterprise management system. The form of the realisation of this process contains planning and carrying out pro-ecological activities, such as initiatives related to the reduction of energy intensity and resource consumption, minimalization and recycling of waste, as well as increasing the share of renewable energy in total energy consumption. They should be constantly included in the organizations' strategies and plans, instead of being episodic actions or PR-tools.

In order to convince the managers to take pro-environmental initiatives, it is virtual to identify the factors that they take into account in the decision-making

processes regarding pro-ecological activities. Therefore, in this dissertation the research was mainly focused on the assessment of the level of managers' environmental awareness, as well as the examination of the essence and determinants of pro-environmental initiatives. Particular emphasis was placed on finding the answer to the question: **Which factors in the highest degree mobilize entrepreneurs to take environmental initiatives, and which do not play a significant role in the decision-making process?**

The research was conducted in the Śląskie Voivodeship, one of the most developed and industrialized regions in Poland. The analysis of the obtained data allowed to diagnose gaps in the environmental knowledge of the surveyed group, as well as to determine the organizations' readiness to implement eco-innovation, thereby, providing material for further analyses of the eco-innovativeness of the region.

The main objective of the dissertation was: identification and evaluation of the pro-ecological activity of the sector of small and medium enterprises, including its determinants in the dimensions of environmental management.

In order to fully realize the main goal several sub-objectives were also determined:

C1: Examination of the level of ecological awareness and pro-environmental attitudes of entrepreneurs in the SME sector.

C2: Characterization of pro-environmental activities undertaken by entrepreneurs of the surveyed group.

C3: Identification of internal and external factors which determine pro-environmental initiatives in micro, small and medium enterprises of the Śląskie Voivodeship.

C4: Assessment of the importance of determinants from the inside of the organization and from its environment, which motivate managers to take pro-environmental activities.

C5: Identification of internal and external barriers encountered by the SME sector as a part of implementing pro-ecological initiatives.

The main hypothesis of the dissertation assumes that **Pro-environmental actions accelerator in the studied SME sector enterprises constitute to a larger extent factors that derive from the inside of the organization rather than their external environment.**

In addition, 8 auxiliary hypotheses were identified, and fully verified in this doctoral dissertation:

H1: Environmental management is not perceived as an important element in the managing strategy of SMEs.

H2: The level of ecological awareness of managers in the surveyed sector is low.

H3: There is a conviction among entrepreneurs that only large organizations are responsible for the state of the environment.

H4: Pro-environmental activities are not perceived as a source of economic benefits for the organization.

H5: Managers do not see a chance to achieve competitive advantage and gaining new clients in eco-innovation.

H6: Pro-environmental activities are episodic and not carefully planned.

H7: Pro-environmental initiatives are usually low-cost activities.

H8: External support programs are not a sufficient incentive to conduct pro-ecological activities.

In order to achieve the objectives and verify the research hypotheses, empirical studies were conducted. The study consisted of two parts. The first one concerned the perception of environmental protection by entrepreneurs from the SME sector and the level of preparation of enterprises for the implementation of eco-innovations. The second examined the actions implemented in enterprises and the factors which determined them. A questionnaire, which was used in the research, was created on the basis of theoretical knowledge. It contained 35 questions about the general perception of pro-environmental activities in SME sector, initiatives carried out in the surveyed organizations along with their determinants and the metrics questions. Most of the questions were based on the five-point Likert scale, where 5 means the highest level of significance and 1 the least. Other questions were multiple choice, open or dichotomous questions (yes/no).

The research sample was selected on the basis of purposive sampling. The subject of research were enterprises regarded as innovative, motivated to introduce changes in their organizations, and constantly looking for solutions in the field of conducting innovative activities as well as means of their financing.

The research material was collected in two ways. The first was the CAWI method (Computer Assisted Web Interview), which assumes receiving a questionnaire via the Internet and filling it online, the second method was an interview with using a paper questionnaire - PAPI (Paper & Pen Personal Interview).

The research was carried out in the third quarter of 2017. 2729 enterprises were invited to the survey, 100 were participants in the 'Zanim udusi nas SMOG' project, the remaining 2629 were organizations that received funding for the implementation of innovations from EU funds in years 2007-2013. 117 companies have responded for invitation (4% of invited). In 108 organizations, the data was obtained using the CAWI method, in 9 via PAPI method. The respondents were the owners, managers and senior specialists from SMEs. Finally, 100 questionnaires were qualified for the statistical analysis. The remaining 17 were rejected due to the incomplete data. To analyse the collected data the classic measures of descriptive statistics were used.

Conducted analyses allowed to draw conclusions regarding the scope of eco-innovation implementation in the surveyed SMEs. The most important of them indicate that,

1. the level of ecological awareness of the surveyed managers is higher than expected before the research was carried out. Most entrepreneurs are aware of the impact of enterprises on the natural environment and of the responsibility for its condition (by all enterprises, not just large organizations). They also recognize the need to consider environmental protection in the organization's strategies what allows to negative verification of hypotheses H1-H3. It also indicates that the managers of the research group follow new trends, including those related to responsibility for the state of the natural environment, to a higher degree than the average sector companies (on the basis of which preliminary research assumptions were formulated).
2. the answers of representatives of small organizations have shown that this group is slightly less environmentally aware than others. What may indicate that after the growth of the organization from micro to small, environmental problems are pushed into the background, after reaching the stage of the medium-sized enterprise there is again a stronger emphasis on these issues.
3. almost every seventh respondent is not able to find sources to fill the gaps in environmental knowledge. The others, as the basic source, most often choose the Internet. Therefore, it is worth encouraging entrepreneurs to use other forms of acquiring knowledge, such as trainings or consultations with advisory companies. Diversified sources give a better chance for obtaining more comprehensive information.

4. among the benefits of introducing eco-innovations, respondents mainly notice financial ones (negative verification of H4). Most often, as economically beneficial initiatives were indicated actions in the field of energy, water, materials saving and activities related to waste management.
5. Most respondents do not perceive eco-innovations as an opportunity to increase their competitiveness (positive verification of the auxiliary hypothesis H5). To change this, it is necessary to create the demand for eco-products. It will strengthen the pressure from customers and create the view that eco-innovations are a source of competitiveness.
6. the surveyed enterprises rarely implement elements that prepare the company to implement eco-innovations such as: including environmental protection in the organization's strategy, indicating units responsible for environmental issues, or implementing environmental management systems (EnMS) along with conducting environmental audits. It seems necessary to make managers aware that preparatory activities in particular, regarding the identification of persons responsible for environmental issues, conducting audits and searching for forms of financing initiatives, are crucial in the implementation of eco-innovations.
7. only slightly more than half of respondents (57%) indicated pro-environmental activities conducted over the past two years, what allows to suppose that a significant part of the surveyed organizations do not implement such activities regularly or did not take them at all.
8. The most frequently undertaken initiatives were those related to energy saving. Activities from other areas of pro-environmental activity were less frequently implemented. As pro-environment activities in the surveyed areas most frequently were mentioned:
 - a. energy saving -. replacement of lighting for more energy-efficient and changing the equipment/machine park to less energy-intensive,
 - b. waste minimalization - waste segregation,
 - c. water saving - modernization of water and sewage network, assembly of aerators
 - d. saving materials - digitization of documentation
 - e. renewable energy sources - installation of collectors and photovoltaics
9. The significant proportion of respondents cannot determine the level of reduction of particular resources or other benefits of eco-innovations implementation. Lack of

identification of effects, as well as omissions in preparatory activities allow to positively verify the auxiliary hypothesis H6.

10. The activities are mainly low-cost initiatives. 50% of respondents indicated that they invested less than PLN 25,000, positive verification of H7.
11. The initiatives were financed mostly from own funds. Subsidies and loans from public funds, which often in social awareness function as the main reason for taking up pro-environmental activity by organizations, were used infrequently. They were also not perceived as important during the decision-making process regarding the implementation of pro-environmental activities, positive verification of H8.
12. Analysis of the ranks given to motivators of pro-environmental activities indicates a higher weight of internal rather than external factors. Factors, according to the average rank they obtained, are classified in the following order:

Place	factor	arithmetic average
1 internal	Reduction of running costs	3.98
2 internal	Environmental protection	3.48
3 internal	Improvement of the image of the organization	3.32
4 external	Achieving a competitive advantage	2.69
5 internal	Increasing the value of the property	2.69
6 internal	Sale of waste materials	2.59
7 external	Subsidies or loans from public funds	2,56
8 external	Avoiding penalties for exceeding environmental standards	2.48
9 external	Willingness to catch up with competitors who have already implemented the changes	2.35
10 external	Meeting eco requirements of clients and contractors	2.32

Therefore, it can be stated that pro-environmental activities do not depend on a large extent on legal conditions or financial support mechanisms, but they are the result of increase in environmental awareness and maturity of SME managers/owners. Generally, it should be agreed that internal factors are the ones, that contribute to taking pro-environmental initiatives, which allows **positive verification of the main hypothesis**.

The aforementioned theoretical conditions and research are discussed in more detail in individual parts of the dissertation. The dissertation includes five main chapters and a summary and conclusions. The first three chapters are theoretical and cognitive.

The fourth and fifth chapter contains a discussion of the results of empirical research. In the first part of the first chapter, the SME sector was characterized, with particular emphasis on its role in the Polish and European economy, in economic, social and environmental dimensions. Next, the essence of the concept of sustainable development was presented, along with the genesis of its creation. The final part of the chapter describes the Corporate Social Responsibility (CSR) and presents the benefits that socially responsible enterprises can get.

The second chapter presents the concept of ecological awareness of managers and its role in shaping pro-environmental attitudes in organizations. Natural capital and environmental services were defined. The possibilities to assess their value in the context of calculating the profitability of potential investments were also indicated. In the further part of this chapter, the concept of environmental management, with particular emphasis on the role of an ecomanager in the sector of small and medium enterprises was presented. In the final part, a synthetic review of environmental management systems with a historical outline of their development was made.

The third chapter focuses on the eco-innovativeness of enterprises. In the initial part of the chapter, the general characteristic of innovations was presented - as a basis for a broader discussion of eco-innovations in the further part of the dissertation. An attempt to classify eco-innovations and to present the process of their implementation in the enterprise was also made. In the final part, a description of the financing possibilities of eco-innovative processes with a particular focus on subsidies from public funds was included.

Chapter four is the first of chapters based on own research. It contains information about the surveyed group and the characteristics of research methods. Issues related to the perception of pro-environmental activities by managers were also presented, as well as the level of preparation of the surveyed organizations to implement pro-ecological initiatives. Thanks to that, the research goal C1, which assumed an examination of the level of ecological awareness and attitudes of pro-environmental entrepreneurs in the sector of small and medium enterprises, was realized.

In the second research chapter, in the fifth chapter of the dissertation, the results of analyses related to pro-environmental initiatives carried out in the surveyed organizations were presented. Particular attention was given to the determinants of these activities, factors that motivate managers to make decisions about their implementation

and barriers that inhibit the implementation of environmental management elements to the overall management systems of these organizations. In the final part of the chapter, the results of our own research were compared with those obtained in European studies, as well as our own model of implementing pro-environmental initiatives in organizations was presented. In the fifth chapter, sub-objectives C2-C5 were realised, and the main hypothesis was verified.

The dissertation was ended with a summary, in which, in a concise manner, the most important conclusions and recommendations for future considerations were presented.

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