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ECOLOGICAL INNOVATIONS AS AN ELEMENT  
OF THE ORGANIZATION STRATEGY

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**ABSTRACT:** The aim of the study is to indicate the essence and increasing importance of the eco-innovations in the strategic activity of the enterprises as well as the potential benefits of eco-innovation for a long-term strategic objectives. The study systematize the knowledge on this topic, and indicate the necessity of their continuous development. The applied methodology is based on an analysis of available domestic and foreign literature. The function of innovation is to balance the product portfolio and maintain competitive advantages what enables to secure company's financial inflows and build shareholder value in the long term. This is a new way of looking at the organisation, i.e. that looks at how innovation should be used for strategic advantage.

**KEY WORDS:** ecological innovations (eco-innovations), organization strategy

## Introduction

Changing economic conditions underscore the growing importance of environmental protection. What's more, economic development often means negative consequences for the environment, which with increasing concern for the natural environment contributes to the growing need for eco-innovations. The aim of these innovations is to reduce the burden on the environment by human activities (Oslo Manual: Rules ...). Together with these changes, the natural environment degrades, which in turn leads to the creation of many barriers to economic development, and thus to changes in the organization's strategy. One of such changes is the application of eco-innovations in the context of the organization's strategy. In view of the growing pollution and depletion of natural resources, currently ecological investments are of interest to both researchers and decision-makers. In all (highly) developed countries it is emphasized that without the implementation of eco-innovations in the economy, it is not possible to effectively solve the growing ecological problems.

The aim of the article is to indicate the essence and growing importance of eco-innovations in enterprises' operations as well as the achievable benefits resulting from the use of eco-innovations. The study presents a theoretical review of selected aspects of ecological innovations and their analysis and evaluation.

## General characteristics of eco-innovations

The literature on ecological innovations is quite limited. What's more important, due to the greater complexity and different hierarchy of objectives an eco-innovation is largely different from innovation in the general sense. The very concept of innovation is understood as introducing a new commodity, a new production method, opening a new market, acquiring a new source of raw materials or semi-finished products, and introducing a new organization in a specific field of industry (Schumpeter, 1960). The goal of innovation is to enable the dynamic development of the company. Taking into account the ecological context of the management indicates that ecological innovations are one of the key areas of economic activity that meets the requirements of sustainable development.

Some of the exemplary definitions of eco-innovations presented below show that they can take different forms in practice. The term "eco-innovation" is a new concept. The prefix 'eco' comes from the word 'ecology', whereas 'innovation' means everything that is new. By eco-innovation, according to

the classic definition, one should understand a new product that provides value for the client and business, while significantly reducing the negative impact on the environment (James, 2001). Eco-innovations can also be defined as: “creating or modifying processes, products, techniques or methods of operation that are perceived as a new by given company and as being progressive in a given field and leading to increased efficiency in the use of resources at their disposal” (Penc, 1999, p. 102).

The aim of eco-innovations is to develop new products and processes that significantly reduce the negative impact on the environment resulting from human activity. Ecological innovations lead to integrated solutions that aim to reduce the resources and energy inputs, which at the same time improve the quality of the product and service. One of the methods of eco-innovation is technological innovation (Carley, Spapens, 2000). The study assumes that ecological innovations are important for the organization's strategy, which can be understood as a changes in technology, organizational structure and business management that reduce or prevent negative impacts on the natural environment (Witkowski, 2008, p. 319). Ecological innovation (product) is an innovation that integrates ecological features of the product and technology throughout the entire life cycle (from “cradle to grave”), thus distinguishing the product from the competing products. Its aim is to implement the requirements of “ecological quality” (Chodyński, 2003).

The Central Statistical Office examines the benefits of implementing eco-innovation at the time of their introduction. (Activity..., 2010). As benefits that arise during the production of a product or service, it lists:

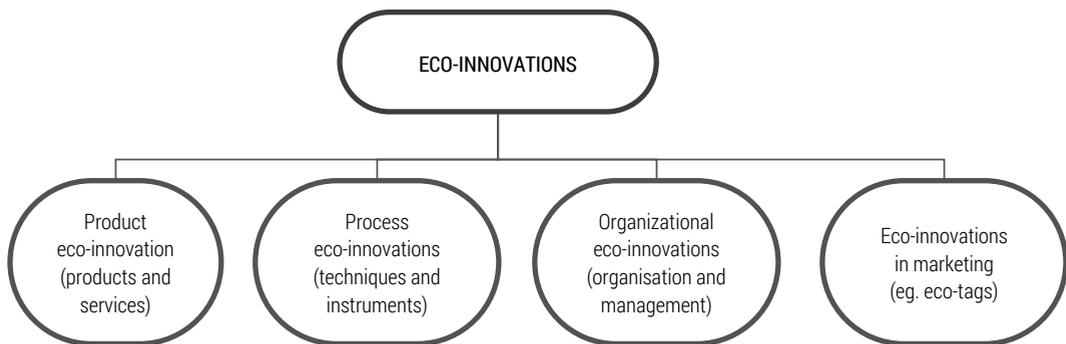
- reduction in material consumption per unit of product,
- reduction of energy consumption per unit of product,
- reduction of carbon dioxide emissions by the company,
- use of less polluting or less hazardous materials for the environment,
- reducing soil, water, air or noise pollution,
- reduction of the share of energy obtained from fossil fuels in favour of renewable sources,
- re-use (recycling) of waste, water or materials.

During the use of the product or using the service, the use of eco-innovation allows:

- reduce energy consumption,
- reduce soil, water, air or noise pollution,
- improve the recyclables of the product after use.

In the literature, the most popular division of eco-innovations is the division into (figure 1): product, process, organizational and marketing eco-innovations (Matejun, 2009; EIO..., 2013; Oslo Manual, Rules..., 2008).

- Product eco-innovation, like the general category of innovation, is the introduction of products or services that will help to better achieve environmental goals. The main purpose of their introduction is to reduce the consumption of materials throughout the product's life cycle (that is from the process of its production, through use to utilization after the end of its usage life). This is made possible through the ability to repair products, regenerate or use recyclable materials.
- Process eco-innovations involve the improvement or introduction of new production technologies or new devices that serve to limit the negative impact on the environment, e.g. reducing the energy consumption of energy-efficient refrigerators.
- Organizational eco-innovations are changes in the company regarding company organization and management, aimed at increasing ecological awareness and implementation of eco-development, e.g. implementation of the ISO 14000 environmental management system.
- Eco-innovations in marketing concern the introduction of a new marketing method in the company that draws attention to changes in the product or packaging, distribution or promotion with particular emphasis on ecological principles, e.g. eco-labelling.



**Figure 1.** The Division of Eco-innovations

Source: author's own work based on Matejun, 2009.

## Innovative Strategies

Sustainable development of an economic entity is based on the premise of strategic thinking. The concept of strategy is used to formulate a set of long-term organizational goals and their modification depending on changes taking place in its environment. The strategy is a set of coherent actions

aimed at achieving a good competitive position. Organizations develop their overall strategy and determine how various functions, such as marketing, finance or R&D, are to support the implementation of this strategy. However, they rarely use the strategy to reconcile innovative activities with their business strategy (Pissano, 2015). The article assumes that the strategy is a management process, consisting of three stages: strategic business analysis, strategic planning and strategy implementation. Implementation of the strategy is "a series of decisions at the tactical and operational level, deciding the key problems in the field of investment, marketing, structures, procedures, finances, which goal is to create conditions for the implementation of the chosen strategy variant and ensuring the efficient course of its implementation" (Romanowska, 1996, p. 3). Organizations that do not have an innovation strategy have little chance of successfully implementing innovations, including eco-innovations.

Often, the reaction of enterprises to the changes taking place in the environment and on the market are innovations. Therefore, they should be considered in various strategic areas, with particular emphasis on the environmental management context, in accordance with the idea of sustainable and long-term development. Currently, due to the growing preoccupation with the protection of the environment and raising social environmental awareness, the implementation of eco-innovation has become important and desired essential and purposeful. Ecological innovations have been distinguished among innovations on the basis of domain and purpose, and, as a result they constitute a specific group of innovations. Ecological innovations are used to achieve the desired environmental effects by the company. From the point of view of the company's strategy, the effect is compliance with regulations, increasing profits (thanks to reduction of fees and environmental fines) as well as improving the image of the company. From the tactical point of view, the goal is to reduce the ecological risk, improve the functioning of production processes, increase environmental efficiency, and better management of resources. However, at the operational level, the quality of the product or the implementation of the project objectives is important, e.g. the development of an environmentally friendly product (Leszczyńska, 2011). Eco-innovations should be implemented in a well-thought-out way in accordance with the company's strategy. They can be an element supporting the greening of management.

The basic division of the innovation strategy has been made on the basis of the amount of expenditure on research and development in a given economic entity. Six types of strategies in the sphere of research and innovation activity are related to this (Freeman, 1982):

- The offensive strategy is aimed at achieving the leading position through innovations consisting of the introduction of a new product and improving the functional features of existing products. The strategy must be based on one of the following factors or a combination of them: contacts with representatives of special knowledge or having their own research facilities.
- A company that uses a defensive strategy does not seek to gain a leading position in the production of a new product or the use of a new method, but at the same time does not lag far behind the wave of technical innovation. A defensive strategy, like an offensive one, has an active attitude towards innovation. A company using this strategy follows the leader with some delay, because he believes that it will keep him from mistakes and allow him to take advantage of the market opening for new products and even take over part of the market by introducing a new product substitute (at least as good as the initiating product).
- The imitating strategy consists in following the producer using the offensive strategy, and often with a long delay, depending on the specific conditions in which the imitating company or the entire industry operates. The activity is based on the relatively quick implementation of other people's solutions. Patents are not an important element as in the previous strategies. The imitator can achieve an advantage with lower costs.
- The dependent strategy is also known as the satellite strategy and stands that the company adopts the function of a cooperative or in some other way subordinated (or satellite) role to the stronger producer. Its own R&D works play here a very minuscule role. A company using this strategy does not try to imitate or initiate changes made by others. The co-operator will use technical services or plan production of his partner.
- The product produced as part of a traditional strategy changes little or no at all. The company usually adopts this strategy when, in his opinion, there is no reason to change the product, because it is neither demanded by customers nor forced by the competition. This situation can only lead to product improvement through innovations that better meet the needs of customers.
- The opportunistic strategy is based on the skilful exploitation of a certain gap which has occurred in the ever changing sphere of production and which has not been yet fulfilled by someone else. The gap allows the first one to discover and fulfil it to prosper for long. The strategy is based on intensive research and development works and striving for product changes or methods of its production, but first of all on good scientific and economic information, long-term planning and entrepreneurship.

Innovative actions, without innovation strategies, will only be a set of activities or best practices. The organization's ability to innovate is closely related to the existence of an innovative and coherent system consisting of processes and structures that define:

- how the company looks for solutions,
- how it turns ideas into a business strategy,
- how he chooses solutions for implementation.

Innovative actions, without innovation strategies, will only be a set of activities or best practices. The organization's ability to innovate is closely related to the existence of an innovative and coherent system consisting of processes and structures that define:

- How will innovation create value for potential customers?
- How will the company capture a share of the value its innovations generate?
- What types of innovations will allow the company to create and capture value, and what resources should each type receive?

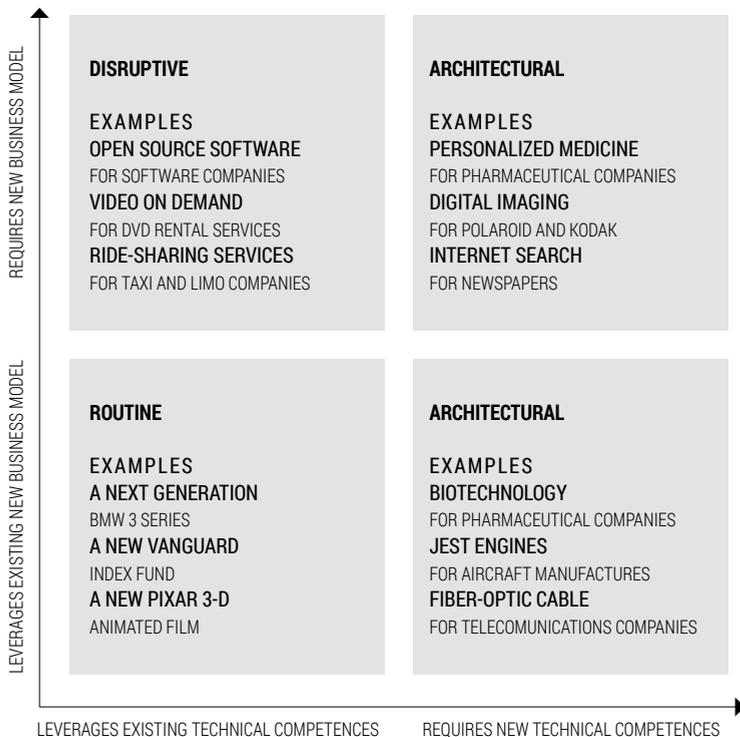
The map of innovation can help to create innovation strategies (see figure 2). Innovation is seen here along with two dimensions: the degree to which innovations entail changes in technologies and the extent to which they influence the business model. By creating an innovation strategy, organizations get the choice concerning how much to focus on technological innovation and how much to invest in innovation within their business models.

The Matrix shows how a potential innovation fits the company's business model and its technical capabilities and can help in deciding what categories of innovation to choose. The business model identifies four categories of innovations (Pissano, 2015):

- routine innovation, which is based on the existing technological competences of the company and fits in with the existing business model,
- disruptive innovation, which requires changes in the business model, but does not necessarily demand technological changes,
- radical innovation, which is the opposite of disruptive innovation, thus it does not require changes in the business model, but requires technological changes,
- architectural innovation, which requires changes in both the business model and technology.

One of the significant distinguishing factors of innovative strategies is the Ecological Criterion. This criterion takes into account human values and should be considered together with the other criteria. Since ecological innovations are considered one of the most important elements of the strategy of all enterprises, it is justified to present the typology of innovative development strategies (table 1). It shows that there are specific connections between

particular types of innovation strategies. Including innovation strategies in the company's strategy helps to focus efforts on building the foundations for the future position of the company.



**Figure 2.** The Innovation Landscape Map

Source: Pissano, 2015.

## Conclusions

The ecological management relies on introducing ecological aspects into the management strategy of the enterprise. The complexity and uncertainty associated with the implementation of eco-innovation pose a major challenge to the strategic management of companies involved in the development of environmental innovations. An important element of the business strategy is the selection of strategies for acquiring innovation, because it can determine the result of innovation in the field of environmental protection.

**Table 1.** Typology of innovative development strategies

Classification criteria	Types of strategies	Characteristics
Innovation objectives	Product, process, organizational	New products, new functional features, new processes, modernisation of old processes, implementation of new organisational systems, increase in management efficiency.
	R&D	Development of own R&D base, cooperation with external R&D units.
Factors of innovation	Purchase of licences	Purchase of domestic and foreign licences.
	Training of workers	Creating one's own intellectual potential, occasional education, shortening the innovation cycle.
Ways of implementing innovation	Pioneering	Insulated, bonded, market leader.
	Imitating	Insulated, bonded, market leader.
Reference to environmental problems	Cost reduction	Reduces costs at the manufacturer's and operating costs at the customer's site.
	Improvement of quality	Production of organic products.
	Ecologization	Ecologization products, processes, packaging.
Market	Customer education	Permanent education, occasional, constant contact with the customer, convenience in purchasing consumer goods, shares of "eco" products.
	Searching for new markets	
	Maintaining old markets	

Source: Białoń, 1999, p. 21.

The dynamic changes currently taking place in the environment and markets, the growing globalization processes and the rising social and ecological requirements result in the more and more frequent involvement of economic entities in pro-ecological activities. Eco-innovations are the response to these changes.

### The contribution of the authors:

Jolanta Pakulska – 50% (concept and objectives, literature review, research etc.).

Małgorzata Rutkowska – 50% (concept and objectives, literature review, research etc.).

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