INTRODUCTION

A market success of enterprises is being more and more often determined by a pro-innovative approach to the business they carry out, including as well the skills of launching new, more competitive products on the market. In the present market conditions it is not enough to take care of satisfying the purchasers’ needs, increase product functionality or commercialise goods at the right moment. Conscious customers expect the manufacturers to take care of ecological and social requirements in the process of new product preparation. Hence, ecological and user friendly products have a great chance to contribute to the increase of sales, revenues, or even profits of the enterprises. They also have impact on shaping the “ecological” image of this economic entity. Consequently, this approach favours building of a strong and stable market position of such entities.

Understanding the full implications of eco-innovations implies taking into account different levels of application. Indeed, eco-innovation needs to be implemented and analysed at three levels: micro (product, service, process, company); mezzo (sector, industry, region, product/service clusters); and macro (economy-wide).

The aim of this article is presentation of the Polish enterprises’ approach to eco-innovations as well as describing the importance of eco-innovative (in other words: sustainable) products in the process of building the competitiveness of economic entities. Among others, the principles of designing such products were described and selected ecological solutions were presented, using the example from the cosmetic industry.

1 ESSENCE OF ECO-INNOVATION

Eco-innovation is defined in different ways. The OECD defines innovation as “the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations”. Eco-innovation represents innovation that results in a reduction of environmental impact, no matter whether that effect is intended or not. Moreover the scope of eco-innovation may go beyond the conventional organisational boundaries of the innovating organisation and involve broader social arrangements that trigger changes in existing socio-cultural norms and institutional structures [13].

The purpose of the article determines citation of the detailed and therefore more precise definition. Eco-innovation is “the creation of novel and competitively priced goods, processes, systems, services, and procedures designed to satisfy human needs and provide a better quality of life for everyone with a whole-life-cycle minimal use of natural resources (materials including energy and surface area) per unit output, and a minimal release of toxic substances” [17]. So, the essence of eco-innovativeness is limiting the negative impact of economy on the environment and society. It is mainly true for such areas as decreasing the usage of raw materials, materials and energy, neutral influence of products and their manufacture on human health, reduction of emissions to the atmosphere, decrease of the waste volume and their easier recycling.

Care about the environment becomes nowadays an imperative for business activity and is one of the factors contributing to an enterprises success. This is because of the following reasons, among others:

- progress in restricting the environment protection regulations and growing costs of abandoning the actions protecting its resources,
- greater social pressure on improvement of the quality of environment and growing consumers’ requirements as far as ecology is concerned,
- broadening the scope of an enterprise activities important for earning profit and winning an advantageous position in the surrounding, by, among others, building and maintaining the best possible relationships with various groups of stakeholders (activities in the public relations sphere),
- losing the value by these technologies and products which do not fulfil the ecological requirements and gaining the value by those which do respect such requirements,
- weakening market position of enterprises which do not employ the eco-management – the international certification system (the ISO 14000 series standards) [14, 19].
The enterprises' proneness to eco-innovativeness is conditioned by external and internal factors. Among the external ones there are mainly legal standards in force pertaining to the conditions of carrying the business activity out, acquisition and exploitation of natural resources and impact on the nature. These are also technical norms in the scope of production standardisation and the technical parameters of products as well as assumptions adopted in the ecological policies of the countries, and incentives related to an appropriate (from the point of view of a country interests) creation and implementation of eco-innovations. Important external factors are also expectations and requirements defined by the purchasers. The consumers' attitude is influenced by many elements, including also the ecological consciousness built thanks to appropriate education programmes. However, one should note that for a part of the consumers, the decisive meaning, as far as purchase decisions are made, has the product price.

The inner factors can count to be the ownership character and approach to innovativeness presented by the owners and enterprise management, decisions made by them pertaining to elaboration and implementation of development strategies and creation of the enterprise image. Important factors are resources possessed by the given economic entity, including the know-how and qualifications of the employees, fast learning skills, engagement in work and identification with the enterprise objectives. The organisation and management systems are also important here which would allow rationalisation of exploiting of the possessed resources and an efficient adaptation of manufacturing processes to changing external conditions which include also the purchasers' expectations [10].

2 ESSENCE AND PROCESS OF IMPLEMENTATION OF ECO-INNOVATIVE PRODUCTS

OECD and Eurostat experts have defined environmental goods and services as “consisting of activities which produce goods and services to measure, prevent, limit, minimise or correct environmental damage to water, air and soil, as well as problems related to waste, noise and eco systems. This includes cleaner technologies, products and services that reduce environmental risk and minimise pollution and resource use”. The OECD classified environmental goods and services into four categories: pollution management, cleaner technologies and products, resource management, and environmentally preferable products [12].

Eco-innovation in products and processes tends to rely on technological development. Eco-innovation in product encompasses novel or significantly improved solutions introduced at any stage of the product life cycle with the aim of improving resource productivity or reducing environmental impact. Innovative firms consider the environmental impact throughout products’ life cycles and integrate environmental strategies and practices into their own management systems. Some pioneers have been working to establish a closed-loop production system that eliminates final disposal by recovering wastes and turning them into new resources for production [13].

Enterprises which attempt to implement eco-innovative products must remember to watch systematically the changes taking place on the market and the needs and expectations of the stakeholders, an in this case – mainly the purchasers. A product which is not an answer to a social demand shall not become an eco-investment.

The process of arising of new products is composed of a few stages: looking for and creation of the idea of a new product, idea selection, economic-financial analysis, project design, manufacture and testing of trial batches, and commercialisation[5]. In the case of sustainable products, the enterprises may not limit themselves only to separation from the scheme one more, important stage which is the waste management phase, as the creation of a sustainable product must start from the moment of looking for ideas of a new product and continue until its launching. Such an approach is defined with the notion of sustainable designing, eco-designing, environment friendly designing, or ecological designing. In general, it is possible to say that sustainable designing is a combination of innovation within the product itself and the philosophy of sustainable development, the three basic elements of which are the natural environment, the people, and market and financial stability of an enterprise. Such designing consists in taking into respect, besides the economic criteria, also the social conditions and requirements concerning environment protection within the life cycle of a new product, paying attention to the whole chain of delivery and the social-economic local, national or international surrounding.

The key role in elaboration of the concept of an eco-innovative product is played by the first stage – the designing phase. At this moment the innovative vision of the future product is created. Eco-innovative enterprises take the advantage of the concept defined as Designed for Environment (DEF), known also as Eco-Design, Life Cycle Design or Design for Eco-efficiency. DEF, originated in early
1990s, is the systematic consideration of design performance with respect to environmental, health, safety, and sustainability objectives over the full product and process life cycle.

Typically the scope of DEF includes the following objectives:

- **environmental protection** – assurance that air, water, soil and ecological systems are not adversely affected due to the release of pollutants and toxic substances,
- **human health and safety** – assurance that people are not exposed to safety hazard and chronic disease agents in their workplace environments and personal lives,
- **sustainability of natural resources** – assurance that human consumption or use of natural resources does not threaten the availability of these resources for future generations [7].

These priorities can be achieved for example by:

- placing environmental stewards on every design team to identify design changes that may reduce environmental impact throughout the product’s life cycle,
- reducing the energy needed to manufacture and helping customers to reduce energy consumption with products,
- reducing the number and types of materials used and developing materials that have less environmental impact and more value at end-of-life,
- increasing the use of modular construction enabling upgrading and repair of the product,
- extending the life cycle of the product (its durability),
- increasing the use of pre-and post-consumer recycled materials in product packaging,
- minimizing customer waste burdens by using fewer product or packaging materials overall,
- designing for disassembly and recyclability by implementing solutions such as the ISO 11469 plastics labelling standard, minimizing the number of fasteners and the number of tools necessary for disassembly.

All types of innovations leading to a lower resource and energy intensity at the stages of material extraction, manufacturing (both in relations to the components and final product), distribution, use, reuse and recycling as well as disposal are considered eco-innovations if they lead to a decreased resource-intensity from the perspective of the whole life cycle of the product or a service [8]. However, Huber underlines that the biggest resource efficiency gains can be realised in the upstream part of the product life cycle that is in the production of base products (most notably during extraction of the raw materials). In the downstream phases of the product life cycle (use of the product, consumer practices) the resource efficiency gains are significantly lower (see Fig. 1).

**Fig. 1: Product life cycle**

An integral element of the designing concept regarding the environment is also taking into consideration the social factors when designing a coherent market concept of the new sustainable product which also takes into consideration the elaboration of an appropriate price, distribution and promotion policy. It should be underlined here that in 1995, in the literature, appeared the concept of the sustainable marketing the authors of which were J. Sheth and A. Parvatiyar. It joins the issue of marketing with the idea of sustainable development [18].

3 ECO-INNOVATIONS EXEMPLIFIED BY POLISH ENTERPRISES

Establishing and conducting a business in Poland does not help the companies to implement eco-innovations. Interest in this area and its development is highly unsatisfactory in Poland, as the eco-innovation index in 2011 is over two times lower than the EU average and four times lower than in Finland – the EU eco-innovation leader. Poland holds the last place among the EU countries and its position has worsened compared to 2010 (the index value has decreased by 6%). This negative assessment concerns each of the five components of the eco-innovation index, with socio-economic outputs the most positively evaluated. Involvement of Polish companies in implementation of eco-innovations gives Poland, together with Bulgaria, the last place – with the index value of 41. Other countries that have recently joined the EU have much higher index values, e.g. the Czech Republic – 171 and Slovenia -119 [9].

However, Polish entrepreneurs have already noticed that investment in innovation is one of the priorities in the companies’ development as well as building strong and stable position on the market. In the years 2009-2011 innovation active enterprises from the industry and service sector constituted 16.9% and 12.3%, respectively, of the total number of entities. The highest percentage of innovation active enterprises was found among the big entities hiring 250 or more persons (57.8% of industrial enterprises and 44.0% of service enterprises). Entities classified into section Manufacture of basic pharmaceutical products and pharmaceutical preparations were the leaders in both percentage of innovation active industrial enterprises and innovative industrial enterprises. As for the service sector, the percentage remained the highest in section Insurance, reinsurance and pension funding, except compulsory social security. Taking into account territorial division, relatively the biggest share of innovation active and innovative industrial enterprises was found in Podkarpackie Voivodship (22.2% and 21.0%, respectively) while of service enterprises in Pomorskie Voivodship (15.3% and 14.1%, respectively) [6].

The specificity of eco-innovation and designing of ecological products in Poland is worth looking at on the example of one of the branches most advanced in this field, this is the cosmetic branch. It requires a look from the angle of ecological approach to the product itself on one hand, improvement of its efficiency and quality, and on the other hand it requires the analysis of production processes and organisation of the whole enterprise.

A sustainable product in the cosmetic branch must fulfil a few basic assumptions: it must not be dangerous for the environment, must not be toxic and must be bio-degradable. To the greatest possible extent it should remain neutral for the negative changes progressing in the natural environment such as: air pollution, enlarging of the ozone hole, arising of the effect of the global warming, climate changing and intoxication of the soil and water. It may neither threat the human health and life. One of the more important rules of designing of eco-products is using environment friendly raw materials and materials (including the packaging). These should be durable and ecological natural materials, or from recycling. A sustainable product must also deliver to the consumer reliable information about itself what contributes to the creation of conscious (so called sustainable) consumption.

According to the cosmetics purchasers, the most important factors deciding about the purchase of these products are the product safety, its composition and properties [11, 15]. A cosmetic, beautifies first of all, it also is to protect and nurse the skin. That is why the clients are interested in products with properties suitable for them. Ecology is also important here. It influences changes in the products themselves and in their packaging. Numerous publications and easier access to knowledge, the increase of the consciousness and wealth of societies as well as the fashion for ecology cause that more and more consumers reach for natural cosmetics. A consumer of natural and ecological products is usually an ordinary man engaged, aware of the impact of chemical additives on the health, relatively wealthy and directed to more than average quality of the products he buys. Often, they are oriented pro-ecologically, preferring healthy and balanced life style which has no negative impact on the natural environment. They are defined as LOHAS (Lifestyle of Health and Sustainability). Natural cosmetics are being perceived as safe, environment friendly products which have lesser side effects on the human organism. That is why these types of products are also looked for by people with sensitive skin...
and with problems, and are applied for children. Natural products are usually treated as the premium class cosmetics of a higher quality and for this reason they find purchasers rather among wealthy societies. Polish manufacturers interested in expansion on the foreign markets must also remember that the most dynamically developing markets for natural cosmetics in Europe are France and Germany. In Germany, ca. 4–5% of all cosmetics sold (according to various data of the Organic Monitor and the German Cosmetic, Toiletry, Perfumery and Detergent Association) are the natural and organic cosmetics [20].

Impact of ecology is reflected also in cosmetics' packaging. They are produced mainly from plastics but also, in a small scope, from paper, metal and glass. Actions of the pro-ecological character are mostly related to the rationalisation of their production and usage. On one hand, these actions are carried out for bio-materials and recycling. On the other hand, there is a tendency to introduce changes in the raw materials: plastic packaging is replaced by the glass one, carton packaging is made from jute, fish skin, India rubber, cane, flax, and hemp. They are printed with printing paints made from plants, or more and more often now, the product description is placed on the inside of the packaging what allows resignation from the leaflets. Construction solutions are also searched for in order to decrease the packaging mass – so the quantity of raw materials and energy required for their production, and to decrease the waste volume. Also, packaging with nano-composites is used which allows achieving such properties of the packing as: fire resistance, better mechanical properties and higher barrier to external factors (micro-organisms). Irrespective of the pro-ecological tendencies, the development in the cosmetics packaging industry progresses in the direction of increasing the users' comfort and safety (children-proof opening), easiness of the packaging usage (dispensers, packing with an in-built light source) and increasing the durability of products inside them (for instance tamper-evident type signalling of opening) [4].

The second group of requirements important from the point of view of sustainable designing is endowing an enterprise with environment friendly technological and organisation solutions. This means application of energy saving devices and technologies, maximal possible usage of the daylight, and heat panels fed with solar energy. The producers' attention should also be focused on decrease of application of harmful chemical agents in the production process, on minimising waste production and on their local recycling. The issue of implementation of certified systems and recognised management standards (ISO) is also meaningful, so is the systematic training of the employees in respect of ecology [16].

CONCLUSION

Eco-innovations influence on the competitiveness of Polish economic entities. The fact should be underlined that advantages which could be expected along with implementation of eco-investments have the chance to appear in the flow of time, as the stakeholders, and in particular the purchasers, must first know about them and have time for acceptance of such solutions so, that consequently they are able to react positively to the news. Hence, the advantage in the form of an added value of an enterprise must be perceived in a longer period. The added value will be the consequence of the increase of sales, broadening and strengthening the bonds with the existing and potential clients for whom besides the quality of the offered production, also its reliability, reputation and ethics of business conduct are important.

For Polish manufacturers, eco-innovations are one of the ways of adapting the business they carry out to the needs and expectations of the purchasers. The sole skill of adapting to new conditions may be a considerable source of advantage when compared to the competitors. However, the economic entities with strong tendencies to innovations usually undertake attempts to anticipate the expectations of the purchasers and to outstrip the competitors, proposing them more advanced solutions. Such an approach proves the enterprises' ability to create development tendencies and their capacity of being more competitive [1, 3, 10].

The driving force of Polish eco-innovative enterprises is not only the must of facing the legal regulations and changing ecological standards. The stronger and stronger stimulus is also the growing awareness of the consumers, regarding the necessity of environment protection. This creates also the need for searching for new technological solutions in production, for elaboration of new concepts of sustainable products, implementation of innovative methods of carrying the business out, but this also forces the entrepreneurs to focus attention on creation of an image of a responsible enterprise which is engaged in the matters of natural environment and concentrated on social aspects. It is worth noticing that Polish economic entities have to undertake activities mandatory for all the enterprises, consisting in respecting the national and international legal regulations. But, they may also decide for a benevolent implementation of the worldwide recognised ISO 14000 standards. They contribute to
the improvement of the enterprise image on the market. Then, they may undertake individual challenges related to a more effective usage of the resources and competence which they possess. These very elements have the chance to become a meaningful value of a new image and standards of an enterprise [2].

Building of an "ecological" image is also a kind of investment in the marketing future of the enterprise, which consists in the coexistence with the society of a given region and also in maintaining close relationships with the national and international surrounding [21]. A close cooperation of an enterprise with local and central institutions favours a better access to financial resources. In turn, the enterprise responsibility for the ecology matters increases the chance of acquiring the investors, as for many of them the social reliability is important to such a degree as the financial responsibility is.

BIBLIOGRAPHY


Abstract

A market success of enterprises is being more and more often determined by a pro-innovative approach to the business they carry out, including as well the skills of launching new, more competitive products. Conscious customers expect the manufacturers to take care of ecological and social requirements in the process of new product preparation. Hence, ecological and user friendly products have a great chance to contribute to the increase of sales, revenues, or even profits of the enterprises. They also have impact on shaping the "ecological" image of this economic entity.

Establishing and conducting a business in Poland does not help the companies to implement eco-innovations – the eco-innovation index in Poland in 2011 is over two times lower than the EU average. However, Polish entrepreneurs have already noticed that investment in innovation is one of the priorities in the companies’ development as well as building strong and stable position on the market. In the article an eco-innovative approach of Polish cosmetics’ producers was presented. A sustainable product in the cosmetic branch should remain neutral for the negative changes progressing in the natural environment such as: air pollution, enlarging of the ozone hole, arising of the effect of the global warming, climate changing and intoxication of the soil and water. It may neither threat the human health and life. One of the more important rules of designing of eco-products is using environment friendly raw materials and materials (including the packaging). These should be durable and ecological natural materials, or from recycling. A sustainable product must also deliver to the consumer reliable information about itself what contributes to the creation of conscious (so called sustainable) consumption. The second group of requirements important from the point of view of sustainable designing is endowing an enterprise with environment friendly technological and organisation solutions.

Key words

eco-innovations, enterprises, sustainable products, Poland

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