

ENVIRONMENTAL MANAGEMENT MODELS

Seroka-Stolka Oksana PhD¹, Krawczyk-Sokołowska Izabela, Prof.,² Grabowska Marlena PhD.³

Faculty of Management – Czestochowa University of Technology, Poland ^{1,2,3}

oksanaseroka@gmail.com

Abstract: In the recent years both academics and practitioners have paid attention to environmental issues. With increasing complexity and diversity of implemented environmental practices they try to find the successful model of environmental management and sustainable development. Although a large number of environmental management models have been developed, there is no good solution because the models are different in their „nature”. Many of them are evolutionary (stage, phase models) models that described a development in time consisting of an increasing integration of environmental concern into business policy and strategy. Others are typology models that characterizes companies' positions, without assuming such a growing responsiveness. The aim of the article is to present the characteristics of sustainable and the corporate environmental management models.

Keywords: ENVIRONMENTAL MANAGEMENT, SUSTAINABILITY, MODELS, ENTERPRISE.

1. Introduction

The contemporary companies are looking for new business models that give them an advantage over competitors. In the classical business models, is quite difficult to trace environmental issues taken account, even if there are, they are treated marginally. Usually, environmental issues are not in the mainstream of business activity. The classical business thinking is based on the premise that environmental activities can become an integral component of business models only when they possess the potential additional economic value for the company and its customers, and the integration of environmental issues will affect the source of real income or costs reduction. One of the options that combines economic, environmental and social issues are sustainable business models. In models of environmental management a special emphasis is put on environmental issues and the possibility of obtaining a competitive advantage.

2. The definition and essence of business model concept

In the literature, there is no one universally accepted definition of the business model. According to G. Hamel business model is, associated with a customers, a composition of core strategy, strategic resources and value network¹. According to B. Nogalski business model is a general concept, that formulates a framework for logic of conducting business and its features such as innovation and competitiveness². The business model is a conceptual tool that includes a set of components and their relationships, presenting a schematic business idea for a specific company. It therefore constitutes a static model of the phenomena, in contrast to the strategy of company's expressing the actions and behavior in relation to changing environmental conditions and its interior³.

¹ Hamel G.: *Leading the Revolution*. Harvard Business School Press, Boston 2000.

² Nogalski B.: *Modele biznesu jako narzędzia reorientacji strategicznej przedsiębiorstw*, [w:] Kieżun W. (red.): *Krytycznie i twórczo o zarządzaniu: wybrane zagadnienia*. Wolters Kluwer Business, Warszawa 2011.

³ Brzóska J.: *Model biznesowy – współczesna forma modelu organizacyjnego zarządza-nia przedsiębiorstwem*. *Kwartalnik Naukowy „Organizacja i Zarządzanie”*, 2/2009.
Gołębiowski T., Dudzik T.M., Lewandowska M., Witek-Hajduk M.: *Modele biznesu polskich przedsiębiorstw*. Szkoła Główna Handlowa, Warszawa 2008.

3. The sustainable business models

The integration of the environmental factor to the company's activities has contributed to the promotion of sustainable⁴ business models. Sustainable business models integrate social, economic and ecological aspect⁵. Dyllick and Hockets present the model based on the concept of corporate sustainability (balancing and integrating the areas of enterprises' activity) mapped in the form of a triangle. This model recognizes three key elements in the model: business case, natural case and societal case. The authors take into account not only the environmental effectiveness of the company's operations but also the social and economic efficiency in this model⁶.

A detailed proposal of sustainable models that take into account the environmental efficiency factor A. Chodyński introduced. The first so-called. pro-efficiency model of social and environmental responsibility (business) is built with the emphasis on the validity of the assumptions of sustainable development and the CSR objectives achievement. This model assumes the integration of the effectiveness of environmental, social and economic operations. The second model so called. enterprising model of social and environmental responsibility (business), is an explication of the first model with emphasis on the role of innovative attitude⁷. Both models include eco-efficiency factor, they differ only in their entrepreneurial mindset. In business practice, it will be difficult, however, to distinguish the two models in the company's development.

McDonough and Braungart introduce a model of corporate sustainability in the form of a triad in which the corners are: ecology - ecology, equity - equity and economy - economy. Between the corners of the triangle are intermediate states, taking into account the marginal conditions described in the corners. The different approaches are characterized in that⁸:

⁴ Słowo zrównoważony (z ang. *sustainability*) najbardziej znane jest z interpretacją związaną z ekologią, oznacza ono także w szerszym ujęciu uelastycznienie i podtrzymywanie życia organizacji lub nawet jej reinkarnację.

⁵ Pabian, A. (2013). Zarządzanie w koncepcji sustainability - ujęcie funkcjonalne. *Przegląd Organizacji*, (10), pp. 3-8.

⁶ T. Dyllick, K. Hockerts, Beyond the Business Case for Corporate Sustainability Business Strategy and the Environment, 03/2002; p. 11(2).

⁷ A. Chodyński, Odpowiedzialność ekologiczna w proaktywnym rozwoju przedsiębiorstwa, Wyd. Krakowskiej Akademii im. Andrzeja Frycza Modrzewskiego Kraków 201, p. 155.

⁸ W. McDonoug M. Braungart, The NEXT Industrial Revolution, The Atlantic Monthly, Vol. 282 Nr. 4, 1998. za: Chodyński, Odpowiedzialność ekologiczna w proaktywnym rozwoju przedsiębiorstwa, Wyd. Krakowskiej Akademii im. Andrzeja Frycza Modrzewskiego Kraków 201, p. 232.

- economy - economy approach focuses on factors arising out of generated profits.
- equity - equity approach focuses on improving the quality of life of all stakeholders and restoring the condition of ecosystems,
- ecology - ecology approach means the respect for the laws of nature and creative behavior in a given location (eg. local aspects).

This model strongly emphasizes the importance of the economic factor (profits), but also widely recognizes environmental aspect and its importance in maintaining the balance in the human being's ecosystem.

Models may be based on the chosen factors configuration (elements), which will be used to build and directing strategies. Ecological models may be based on⁹:

- eco-innovations realization,
- concentric diversification,
- internal operations diversification,
- the construction of "green" competences,
- vertical integration,
- layouts and strategic alliances creation,
- performance assessment methods,
- environmental benchmarking,
- environmental management models (proactive environmental management).

Each of these groups of factors constitute a different configuration, which may define a core model. These model's elements, that direct the strategies, will be mandatory components, the others can vary in time (optional factors).

In recent times in the international literature, a new trend associated with the different approaches to environmental management businesses has been appeared. The issue of environmental management models has been developed from the 80's of the twentieth century, but there are still many gaps in knowledge on the specificities of environmental management models. In the literature, generally there are two **models of environmental management** in the process of building a company's competitive position¹⁰:

evolutionary model (continuous) - understood as a system of mutual relationships, in which decision-making rules are created. In this case we speak about stages (levels) associated with the company's approach to environmental problems, during this proces a desired model emerges,

"typology" model - involves the creation of a specific combination of organizational characteristics of the company, resulting in the achievement of specific results. In such a model it is not easy to achieve efficiency increase, which corresponds to the approaches used in the model allowing the formation of strategic advantage (based on the of M. R. Porter and Miles, E. Snow strategy).

The environmental management models are essentially based on three criteria (factors)¹¹:

- internal of the enterprise (process conditions)

- internal and environment of the enterprise (hybrid models)
- the enterprise's environment.

Most of the environmental management models are based on combined criteria, which are internal processes and factors derived from the enterprise environment¹². So far, about 40% of environmental management models have been developed on the basis of economic practice.

4. The environmental management models

The environmental management models are vary from each other, also because of the company's adaptation way to the environment. An *adapting method* is a general adaptation, which can be divided into two categories: reactive and proactive (anticipatory)¹³. Reactive actions are taken *post factum*. On the other hand, proactive (anticipatory) are preparing for the potential impact of changes in the environment and are preventive in nature. They require foresight and planning, that in the case of reactive activities are not necessary.

From the adapting method apparent the various companies' approaches to environmental management, which differ in the level of adaptation. Accordingly, environmental management models can be divided into passive, reactive and proactive. Passive enterprises are characterized by low levels of adaptation, the reactive company - an average level of adaptation, while proactive firms exhibit the highest levels of adaptation. Table 1 presents a summary of environmental management models, from the level of adaptation and accompanying environmental strategies point of view.

Table 1: The adaptation level and environmental management models in an evolutionary approach

Adaptation level	Environmental management model	Environmental strategy according to J.A. Aragon-Correa
Low level of adaptation (the company protects itself against the strong influence of the environment, isolated or defended)	Passive	Passive
Average level of adaptation (the company does not protect against the environment, reactively responding to changes in the environment)	Reactive	Reactive
High level of adaptation (the company faces various changes, because anticipated them and was prepared)	Proactive	Proactive

Source: Own work

The level of adaptation of the company determines the approach the company to changes in the business environment and the response to these changes. According to the company's evolutionary model, in subsequent stages of evolution of environmental management, solve the environmental problems of different specifics, complexity and uncertainty response to the environment, and the degree of integration and employee involvement in environmental activities is progressively increasing.

In the literature, an evolutionary model of environmental management represent, among others, Roome (1992), Post and Altman (1994), Hart (1997), Berry and Rondinelli (1998) and JA

⁹ A. Chodyński, A. *Wiedza i kompetencje ekologiczne w strategiach rozwoju przedsiębiorstw*, Wyd. Centrum Doradztwa i Informacji Difin, Warszawa 2007, pp. 119-128.

¹⁰ Ibidem, pp. 14-31.

¹¹ Ibidem, p. 14-31.

¹² Kolk, A., Mauser, A. (2002). The evolution of environmental management: from stage models to performance evaluation. *Business strategy and the environment*, 11(1), 14, p. 14-31.

¹³ B. I. Smit, I. Burton, R. Klein, J. Wandel, *An anatomy of adaptation to climate change and vulnerability*, „Climatic Change” 2000, vol. 45, nr 1, pp. 233-251.

Aragon-Correa C. (2003) and Jabbour (2010). Generally, these models have from 3 up to 5 stages and relate to model type characteristic options or evolution stages of environmental management.

N. Room's model (1998) presents five stages of environmental management¹⁴:

- Failure to comply with regulations - companies do not apply any measures to protect the environment and do not meet their requirements,
- Compliance with regulations - companies are motivated to pro-ecology behavior only by need to meet the requirements of environmental regulations and are solely interested in maintaining compliance with them,
- Compliance plus - the company implement measures to meet the requirements, as well as undertake additional pro-environmental activities in the frame of realized environmental policy,
- Commercial and environmental excellence – companies, that systematically apply preventive solutions and environmental practices based on the principles of total quality management, and the use activities in the field of environmental management to gain a competitive advantage,
- Environmental leadership - companies that achieve environmental leadership position in the industry or sector and determine the path of development of environmental management to other entities.

In C. Jabbour's model (2010) there are three stages of its environmental management evolution¹⁵:

- reactive stage - typical for companies fulfilling the legal requirements and environmental regulations, the environmental problems are being solved at the moment of their appearance, based on the "putting out fires" principle, the company does not communicate with external stakeholders in addressing environmental problems,
- preventive stage - typical for companies that are looking for possibilities to optimize the use of natural resources and utilize the principles of 3R recycling (Reduce, Reuse, Recover), environmental issues are included in the company's organizational area, the company initiates the environmental operations in order to solve environmental problems with external stakeholders,
- proactive stage - the highest level of advancement of the enterprises' environmental management, typical for companies for which environmental goals are the priority, and are a fundamental part of company strategy which results in improved competitiveness, environmental issues are integrated into all areas of business management, at this stage, companies use the LCA methodology and select their suppliers in order to improve environmental standards.

On the basis of the above characteristics of the environmental management evolutionary model, seems that each stage emerges evolved with increasing experience in order to achieve the desired environmental management model.

Typology model is presented by Steger (1988) highlighting four companies' strategic options¹⁶:

- non-intervention strategy (inactive, passive, indifferent), which is restricted to comply with only those regulations that serve to protect the environment and do not jeopardize the

functioning of the company, especially in terms of loss of reputation,

- defensive strategy (of withdrawal), which results in a conscious and consistent withdrawal from the market of products not meeting environmental requirements, with concurrent modification of manufacturing processes and organization in such a way as to raise their environmental attributes,
- offensive strategy (aggressive, active), allowing the use of all means, including financial, eg. credits aimed at improving manufacturing technology, changes in the internal structure of the company in such a way that the processes and functions of the company take into account the issues related to the environment protection and to promote the establishment of ecological culture as an important component of the company's organizational culture,
- innovation strategy relating mostly to changes in the sphere of technique and technology, which are a response to growing regulatory requirements of environmental protection, although today more and more frequently, even in management (including the growing importance of organizational innovation) and the market (marketing) aimed at reduce the impact on the environment.

Winn and Angel (2000) are also the supporters of the typology model typology, which presented the process models of environmental strategies indicating 4 types of them¹⁷:

- unrealized greening type – the company's top management is highly committed to environmental aspects, which are considered in all functional decisions, although the company does not take any responsibility for its environment. The sources and products management does not take into account the environmental aspects, as well as there is no environmental product innovations. Without formal planning and even a little monitoring of internal environmental performance or external developments, the company is not prepared for the new developments.
- deliberate reactive type – the company's top management shows weak or no commitment to the environment, and company does not take any responsibility for the environment. In additional, environmental considerations are not part of the functional decisions made within the company. This kind of company adopts a reactive approach, when it is engage in some specific environmental operations only when forced to do so by regulatory pressure.
- an emergent active type – the company adopts a proactive approach to environmental activities. This kind of company takes the responsibility for the environment and manages the greening of its suppliers and its products. A major part of the company's capability set is prevention: the company controls its own environmental performance and is engaged in planning and external monitoring operations in order to anticipate in future regulation and emergent environmental issue.
- deliberate proactive type – the company's top management is highly committed to the environment and to sustainable development. The company adopts high values on both commitment and implementation dimensions, the environment's aspects are taken account in all functional decisions and material flows, starting from the sources and suppliers till product design, all these are managed with the environment in mind. Companies in this category are deliberate in their proactive and systematic approach to environmental activities.

Table 2 summarizes the environmental management models according to the evolutionary model and the typology model.

¹⁷ Winn, M.L. & Angell, L.C. (2000), Towards a Process Model of Corporate Greening, *Organization Studies*, Vol. 21, No. 6, pp. 1119-1147.

¹⁴ Roome N., *Developing environmental management systems*. Business Strategy and the Environment. Vol. 1 (1), 1992, pp. 11-24.

¹⁵ Jabbour, C., (2010), *Non-linear pathways of corporate environmental management: a survey of ISO 14001-certified companies in Brazil*. *Journal of Cleaner Production* 18 (12), pp. 1222–1225.

¹⁶ Steger U., *The greening of the board room: how German companies are dealing with environmental issues*. [w:] Fischer K., Schot J., *Environmental Strategies for Industry: International Perspectives in Research Needs and Policy Implications*, Island press. Washington DC 1993, pp. 147-166.

Table 2: Environmental management models

Author	Type of model	Description	Stages/ options number	Nature of model
Steger (1988)	Environmental strategies	Passive, defensive, offensive innovative	4	Typology
Roome (1992)	Strategic options to react on environmental pressure	Non-compliance, Compliance, compliance plus, commercial and environmental excellence, leading company	5	Ewolucyjny (continuum)
Post Altman (1994)	Stages of organizational change	Adjustment, adaptation, anticipation, innovation	3	Ewolucyjny (continuum)
Hart (1997)	Environmental strategy	Pollution prevention, product stewardship, clean technology	3	Ewolucyjny (continuum)
Berry Rondinelli (1998)	Stages of corporate Environmental management	non-compliance, compliance, beyond compliance	3	Ewolucyjny (continuum)
Winn Angell (2000)	Corporate greening	Deliberate reactive greening, unrealized greening, emergent active greening, deliberate proactive greening	4	Typology
J.A. Aragon-Correa i C. (2003)	Stages of corporate environmental management	Passive Reactive proactive	3	Ewolucyjny (continuum)
C. Jabbour'a (2010)	Management approaches	Reactive, preventive, proactive	3	Ewolucyjny (continuum)

Source: Own work based on the literature

On the basis of the presented selected environmental management models' descriptions, it appears that evolutionary model (stage model) positions the company in relation to its competitors due to its stage in the advancement of environmental management. Stages in evolutionary models are extracted based on various factors, on which a particular emphasis is put. However, they may be difficult to implement in economic practice due to blurred boundaries that exist between them.

Evolutionary model and typology model also differ due to the company's reaction on the environment. Typology model does not change over time, so company's greater flexibility in adapting to the environment in accordance with the chosen type of model is its advantage. The advantage of evolutionary models is their progressive process of incorporating environmental aspects into different management areas and levels. However they exhibit less flexibility in relation to the environment. Implementation of environmental management models must have its reference to the company's strategy. The important condition for successful implementation of the strategy based on an environmental management model, is its assumptions' transfer on an operational level.

A major problem in the environmental management models implementation may be appearing dissonance due to excessive concentration of top management or management processes only, or on the environmental effects obtained by company. None of the existing models has not gained greater recognition practice yet. There is still a lot of environmental management models that have not been identified on the basis of economic practice. Existing models are in epistemological phase only.

5. Conclusions

Environmental management models classifications vary significantly, depending on the adopted approach to the environment and respond to changes in company's environment. Environmental management models take an evolutionary (progressive) or "typology" character, which involves the creation of factors' specific combination. In the evolutionary model the factors configuration change over time together with growing company's experience. Typology model requires the possession of the necessary resources and capabilities in its implementation.

References

- A. Chodyński, A. *Wiedza i kompetencje ekologiczne w strategiach rozwoju przedsiębiorstw*, Wyd. Centrum Doradztwa i Informacji Difin, Warszawa 2007, pp. 119-128.
- A. Chodyński, *Odpowiedzialność ekologiczna w proaktywnym rozwoju przedsiębiorstwa*, Wyd. Krakowskiej Akademii im. Andrzeja Frycza Modrzewskiego Kraków 201, pp. 155.
- B. I. Smit, I. Burton, R. Klein, J. Wandel, *An anatomy of adaptation to climate change and vulnerability*, „Climatic Change” 2000, vol. 45, nr 1, pp. 233-251.
- Brzóska J.: *Model biznesowy – współczesna forma modelu organizacyjnego zarządzenia przedsiębiorstwem*. Kwartalnik Naukowy „Organizacja i Zarządzanie”, 2/2009.
- Gołębiowski T., Dudzik T.M., Lewandowska M., Witek-Hajduk M.: *Modele biznesu polskich przedsiębiorstw*. Szkoła Główna Handlowa, Warszawa 2008.
- Hamel G.: *Leading the Revolution*. Harvard Business School Press, Boston 2000.
- Jabbour, C., (2010), *Non-linear pathways of corporate environmental management: a survey of ISO 14001-certified companies in Brazil*. Journal of Cleaner Production 18 (12), pp. 1222–1225.
- Kolk, A., Mauser, A. (2002). The evolution of environmental management: from stage models to performance evaluation. Business strategy and the environment, 11(1), 14, pp. 14-31.
- Nogalski B.: *Modele biznesu jako narzędzia reorientacji strategicznej przedsiębiorstw*, [w:] Kieżun W. (red.): *Krytycznie i twórczo o zarządzaniu: wybrane zagadnienia*. Wolters Kluwer Business, Warszawa 2011.
- Pabian, A. (2013). Zarządzanie w koncepcji sustainability - ujęcie funkcjonalne. *Przegląd Organizacji*, (10), pp. 3-8.
- Roome N., *Developing environmental management systems*. Business Strategy and the Environment. Vol. 1 (1), 1992, pp. 11-24.
- Steger U., *The greening of the board room: how German companies are dealing with environmental issues*. [w:] Fischer K., Schot J., *Environmental Strategies for Industry: International Perspectives in Research Needs and Policy Implications*, Island press. Washington DC 1993, pp. 147-166.
- T. Dyllick, K. Hockerts, Beyond the Business Case for Corporate Sustainability Business Strategy and the Environment, 03/2002; p. 11(2).
- W. McDonoug M. Braungart, The NEXT Industrial Revolution, The Atlantic Monthly”, Vol. 282 Nr. 4, 1998. za: Chodyński, *Odpowiedzialność ekologiczna w proaktywnym rozwoju przedsiębiorstwa*, Wyd. Krakowskiej Akademii im. Andrzeja Frycza Modrzewskiego Kraków 201, p. 232.
- Winn, M.L. & Angell, L.C. (2000), Towards a Process Model of Corporate Greening, *Organization Studies*, Vol. 21, No. 6, pp. 1119-1147.