

# OVERCOMING PROBLEMS ASSOCIATED WITH UNCERTAINTY OF THE ENVIRONMENT BY USING FORESIGHT APPROACH

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## Abstract

*Diversity and variability of organization's environment have a certain level of uncertainty about the future states. Uncertainty which is the central theme of strategic management is a key factor for managing organizations, determining the company's competitive position in a long time. Uncertainty means that the ability of managers to predict future states, requires the use of new instruments and methods. Such instruments include foresight. The article presents how organizations can overcome problems with variability and unpredictability of the environment in which they operate by using foresight approach.*

*The basic features of foresight studies, which determine the usefulness in combating volatility and unpredictability of the environment include:*

- *use a variety of methods, ensuring diversity of sources of data, methods of obtaining them;*
- *socialization process of creating the future;*
- *continuity of the process of creating the future;*
- *taking account of the unprecedented events such as the wild card in the foresight study ensures that the organization is more aware of your surroundings and the strategic decision-making process is more resistant to future changes;*
- *the fact that the foresight research create a safe space. The results are placed in the distant future, which allows participants to be more open to co-operation, understanding their vision and the development of trust between the participants.*

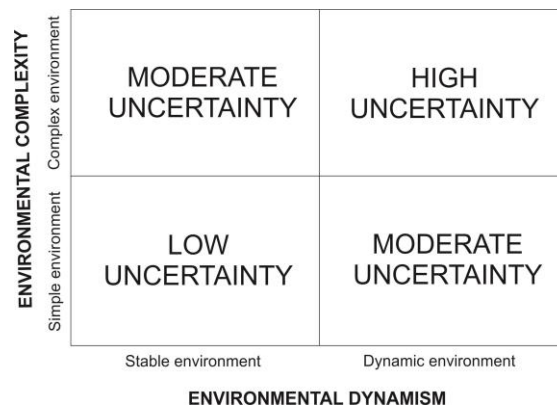
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## 1. Introduction

Uncertainty and unpredictability are a challenge for managers in both the application and the theoretical aspect, enforcing the use of methods and tools for planning your activities different from the existing ones. Questions concerning the future of the organization, its shape, and the factors determining it have always been of strategic importance. Every organization creating an open system is part of a proximal and distal environment, with which it enters into feedback. The competitive position on the market is dependent on internal factors (company resources) and external factors characterizing the proximal and distal environment of the organization. Given the diversity of environmental factors and their variability, the environment the organization is characterized by a certain level of uncertainty about the future states. The level of uncertainty is the resultant of the level of complexity and the volatility level, that is the dynamics of changes, of the factors present in the environment (Figure 1).



**Figure 1.** Levels of environmental uncertainty

Complexity of the environment results from:

- heterogeneity of drivers of change;
- the relation and mutual influences among drivers of change and the relationships of each driver with a large number of components of the micro and macro environment
- new event in the environment;
- low rate of evaluation of drivers of change.

Dynamism is the result of:

- frequency of the rise of New and disruptive drivers of change
- speed of the evaluation of this drivers (Vecchiato, 2012b).

Additionally Dess and Beard identified dynamism, complexity and munificence as the main characteristics of environmental uncertainty. Authors define dynamism as the level of turbulence or instability in the environment, complexity as the diversity and concentration of resources in the environment, and munificence as the relative level of existing resources (Dess and Beard, 1984). The uncertainty, that is the lack of confidence in future states, both in the factors affecting the organization, and the organization itself has become an essential element of the game to maintain our competitive position on the market. According to J. Rokita the enterprise environment is influenced by a non-linear feedback structure, which causes the system 'to be on the border between stability and instability, generating patterns of behavior that are irregularly variable and therefore unpredictable.' Thus, we are dealing with a random variability and unpredictability of future behavior. The system is disordered, on the verge of chaos (Rokita, 2007). Most organizations are not prepared to deal with problems in the turbulent environment (Ringland, 2010).

In the case of variable and unpredictable environment, the manager can choose one of three paths to proceed: (i) adopt a passive attitude - thus losing the position on the market, (ii) use past practices, often not adapted to current conditions, (iii) shape their future in a systematic, structured way, while taking advantage of upcoming opportunities in the environment. When choosing one of these approaches the manager can make one of the two categories of errors identified by R. L Ackoff, J Magidson and H. J. Addison. The first is one is the error of action, that is doing something that should not have been done, the other is the error of omission, that is not doing something that should have been done (Ackoff, Magidson & Addison, 2006).

As noted by J. Ringland, there is no reason to believe that the world will become more predictable. On the contrary, the experience of past years, and the study of the dynamics of complex systems suggest that uncertainty is and will remain an inherent and fundamental feature of the socio-economic reality. It is not to be expected that more data and more sophisticated mathematical models will dramatically increase the forecast accuracy. Therefore, the main challenge is not to strive for a perfect prediction, but to make the right strategic decisions under the conditions of uncertainty (Ringland, 2006).

Since 1960s many research on environmental uncertainty had been conducted. As a result of the increasing interest in organizational environment, its conceptualization and hence measurement

became important. Sener research showed that many managers develop their strategies based on perceived environmental uncertainty (Sener, 2012). According to Weick, the organizations create their environment. On the other hand, in many research, objective criteria was preferred in order to determine the organizational environment (Weick, 1979). Both objective characteristics and the perception of managers are important for the conceptualization of organizational environment (Aldrich, 1979). Wang, Yeung, Zhang found that environmental uncertainty enhances the effects of trust (Wang, Yeung & Zhang, 2011). Miller and Friesen have shown the relationship between uncertainty of the environment and the level of innovation in the organization (Miller & Friesen, 1982).

The diversity of the research on environmental uncertainty indicates the relevance and usefulness of further research in this area. Uncertainty means that the ability of managers to predict future states, requires new tools and methods. The actions of managers in the conditions of environment unpredictability depend on the size of the enterprise, represented branch of industry, occupied competitive position, all of which determine the capability to affect and develop the environment. This requires the use of different tools and methods that do not focus only on the analysis and evaluation of the status quo but focus on future phenomena, taking into account their complexity and dynamics.

This paper presents the results of research on the uncertainty of environment, perceived by Polish companies in terms of its dynamics and complexity, and indicates the possibility of using the foresight type research in the context of predicting future changes in the environment.

Scientific problems were formulated in the form of two questions:

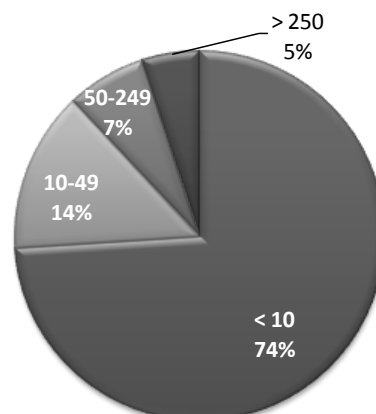
- How do Polish companies consider the issue of uncertainty of the environment in which they operate?
  - How can we use foresight research in the process of management of environmental uncertainty?
- None of these issues has been taken in the polish literature.

## 2. The uncertainty of the environment according to the opinion of Polish enterprises

The aim of the 2013 research was to assess the perceptions of the level of environmental uncertainty, with emphasis on the complexity and dynamics, which was the basis for proposing the foresight research as an instrument enabling organizations to anticipate the changes in the environment, and adapt to future changes.

The study included 114 companies within the territory of Poland. The tool used in this study was a questionnaire made available to the surveyed in an electronic form.

The structure of the enterprises, ordered according to the number of employees, is shown in Figure 2. Among the enterprises, units employing up to 10 people were the most numerous (74%). The next largest group consists of the representatives of small businesses, employing between 10 and 49 people. Their share in the structure of the surveyed entrepreneurs amounted to 14%. The share of the other two groups of medium and large enterprises amounted to 7% and 5% respectively.



**Figure 2.** Structure of the enterprises by employment size

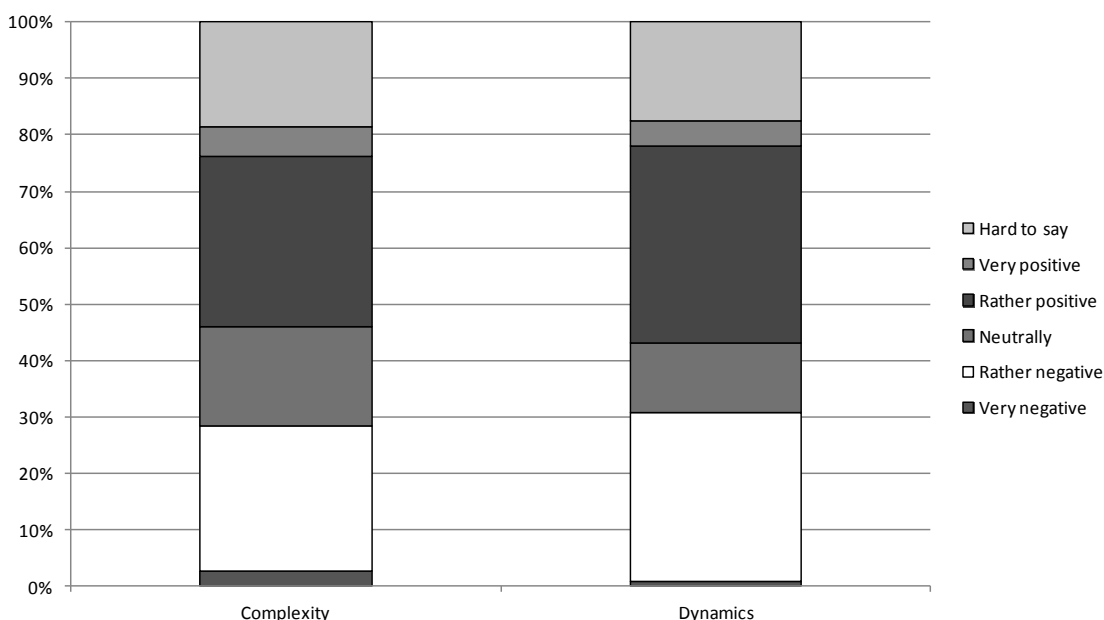
First, the respondents were asked to indicate the level of dynamics and complexity of the environment, in which they operate. Subsequently, the answers to two questions were compiled together: the ones concerning the dynamics and the complexity of the environment (Table 1).

**Table 1.** The dynamics and the complexity of the environment in the opinion of the respondents

<i>Environmental Dynamisms Level</i>	<b>Environmental Complexity Level</b>				<b>Total</b>
	<i>Simple</i>	<i>Rather simple</i>	<i>Complex</i>	<i>Very complex</i>	
Stable environment	3%	5%	1%	0%	9%
Rather stable environment	2%	11%	16%	0%	30%
Dynamic environment	1%	2%	41%	5%	49%
Very dynamic environment	0%	0%	7%	7%	13%
<b>Total</b>	6%	18%	65%	11%	100%

Over 40% of respondents identified the environment, in which their organization operated as complex and dynamic (black). For 16% of respondents the environment is of complex character, but more stable. One in every 10 respondents indicated that the environment is rather uncomplicated and rather stable. Only 7% of the companies indicated that the environment, in which they operate is very complex and very dynamic.

The dynamics and the complexity of the environment can influence the company in different ways (positively or negatively). The respondents were asked how the dynamics and the complexity of the environment affect their businesses. The respondents used of the following response scale: very positive influence, rather positive, neutral, rather negative, very negative, or hard to say. The results are shown in Figure 3.

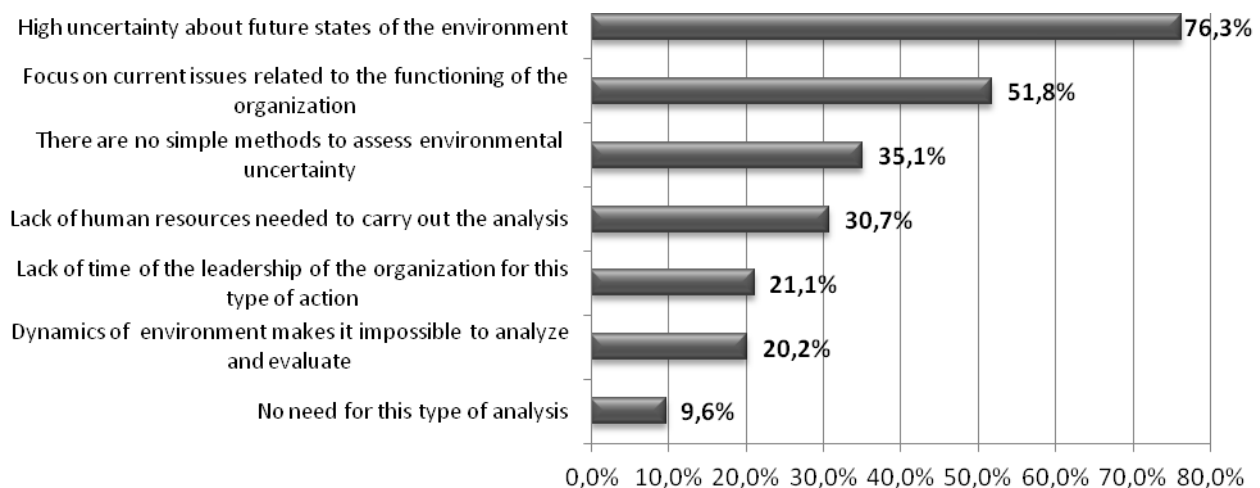


**Figure 3.** The level of impact of the dynamics and the complexity of the environment on the surveyed companies

One respondent pointed out that both the complexity and the dynamics of the environment has a rather negative or negative impact on the functioning of the organization. On the other hand, almost 40% of respondents indicated that the impact is positive or rather positive. And in this

context, the organizations perceive the environment as a factor of positive changes within the organizations, which are the source of innovation.

During the study the respondents were asked to identify the problems faced by companies in the process of analysis and predictability of the environment, in which they operate. Over 76% of respondents indicated that the biggest problem related to the environment, where the organization operates is the high uncertainty about future conditions and the focus on the current issues related to the functioning of the company. Every third respondent pointed to the lack of simple methods for assessing the environmental uncertainty and the lack of staff resources needed to conduct this type of analysis (Figure 4).



**Figure 4.** Problems faced by entrepreneurs in the context of environmental uncertainty

The study led to the following conclusions:

- the surveyed representatives of the companies perceive the environment in which they operate in different ways; more than 40% of the respondents indicated that the environment is complex and dynamic; according to 16% of the respondents that the environment is of complex character, but fairly stable; only 7% of the companies indicated that the environment, in which the organizations operate is very complex and highly dynamic. The level of perception of the complexity of and dynamics of the environment should determine the methods and tools for its analysis and ways to predict changes resulting in adaptive actions in the future;
- the dynamics of and the complexity of the environmental factors affecting the organization have both positive and negative effects on the functioning of the organization; organizations should identify the environmental factors that stimulate them and are the source of their innovative activities;
- the lack of simple methods for assessing environmental uncertainty and the lack of human resources is an important issue for the organizations.

The study indicated the possibility of applying foresight research in the process of creating the future of the organizations under the conditions of environmental uncertainty.

### 3. Strategic Foresight - basic concepts

In order to ensure the long-term competitive advantage, companies need to develop the ability to search, plan and develop new business areas. Developing the right approach requires taking into account the challenges, which include (i) the need to integrate multiple approaches (ii) ensuring the participation of key stakeholders and decision makers (iii). operating under the conditions of environmental uncertainty (iv) taking into account the relationship between the factors affecting the organization - for example the market , technological , social, legal, and economic factors (Heger &



Rohrbeck, 2012). Foresight is one of the tools used during the planning phase, and the strategic foresight is its variety.

In simple translation the English word "foresight" means to anticipate, but such a translation narrows down the semantic area of the term. Due to the lack of a commonly accepted equivalent meaning of the term "foresight" in the Polish language, in the literature the term is used in English. The closest equivalent of the term "foresight" may be the translation of the term "active construction of the image of the future" (Jasiński, 2009). According to Keenan and Miles, foresight is a systematic, participatory process of building a medium and long-term vision, aimed at today's decisions and mobilizing joint actions (Keenan & Miles, 2001).

Hines and Bishop have defined the strategic foresight as the organization's ability to create various, quality visions of the future and applying the emerging visions in the most useful way for the organization (Hines & Bishop, 2007).

According to Kuosa Tuomo the strategic foresight concerns the predicting of future of issues, strategic for the organization. These areas include the organization's ability to anticipate emerging opportunities and threats in the environment, identifying dependence paths (networks), success factors (drivers), motivational factors, evolution of resources that shape the process of making alternative decisions, providing space for the possible, reliable, probable and preferred future paths of development (Kuosu, 2011). The author, by comparing the functioning of any organization to a state of war, points to the need to learn both the inside of the organization (its resources, capabilities) and its surroundings (the enemy). Only in the case of knowing yourself and the enemy, you can win every battle. Winning a battle does not always means defeating the enemy and achieving the assumed strategic objectives; sometimes you just have to know the enemy's strategy and prevent the enemy from achieving their strategic objectives.

The strategic foresight analyzes the future as a multi-dimensional reality, which means that you cannot think about the future in a linear fashion. It assumes that there is no single future, but there is a number of its variants (Mojica, 2010).

Foresight research creates a safe space. The results are placed in the distant future, which enables the participants to be more open to co-operation, understanding of their vision and the development of trust between the participants. In their solutions, the participants of foresight research are more innovative, more determined and willing to take risks. Focusing on the operating environment (close environment), characteristic of most organizations. Foresight research broadens this perspective to the remote environment, characterized by changing circumstances and new challenges. Participants are able to better see the interconnectedness and interdependencies in a complex environment (surroundings). The participants and the organization itself can explain and verify their assumptions, ideas, and values, which helps to explain their objectives and aspirations. As a result, the participants indicate (reveal) the future activities that are consistent with their values and purpose. If stakeholders are involved in the process of foresight, they determine their future themselves, they understand what needs to be done to achieve it, and build a network of connections in order to create the future (Bezold, 2010).

#### **4. Strategic Foresight as a tool to analyze the unpredictable environment**

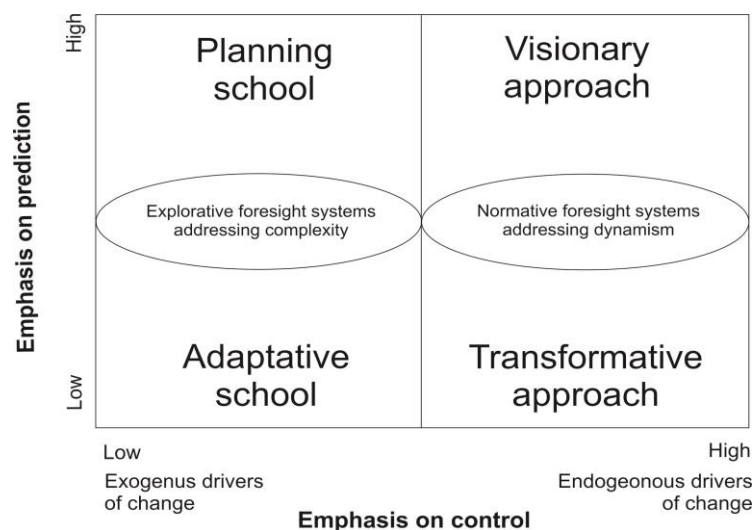
The primary objective of the strategic foresight should be to anticipate and shape the futures strategic for the organization. These areas without a doubt include the organization's ability to anticipate emerging opportunities and threats in the environment, identify dependence paths (networks), and success factors (drivers).

Research in the field of strategic management related to the concept of uncertainty is carried out in the context of two basic theoretical assumptions. According to the assumptions of the planning school, in the face of increasing uncertainty, the organizations that are working towards acquiring the knowledge of the future will be in a better position than those that do not. This approach accentuates system analysis and integrated planning, as well as any activities related to the analysis of trends, creating alternative solutions and forecasting. According to this approach,

anticipating is not perfect because it is associated with many difficulties, but it is the best way to adapt to the changing environmental conditions. In contrast to the planning school, the adaptive school aims to avoid predictions in favor of identifying and responding to events that occur. This approach strongly emphasizes continuous experimentation and rapid adaptation to changes in the environment (when they occur) (Mintzberg, 1994).

The assumptions of the planning school, are the base for the development of foresight studies as a tool for making predictions and informing decision-makers in uncertain conditions (Vecchiato, 2012a). According to the author, regardless of whether the main source of uncertainty is the complexity or the dynamism, the pressure from the organizations to predict changes should be the same. The applied tools and techniques should generally have the character of an adopted, proactive attitude towards the future. The main objective of the organization should not be to acquire the knowledge of the future, but to recognize the alternative scenarios allowing to quickly and effectively respond to changes.

However, the emphasis control is strictly dependent on the main determinant of environmental uncertainty (Figure 5). In the case of high complexity (and where the drivers of change are exogenous), foresight systems basically consist explorative approaches that aim to position firms so as to take maximum benefit from changes in the business environment. In the case of high dynamism (and endogenous driver of change), foresight system basically consist normative approaches aim at shaping the evaluation of drivers of change and thus of the business environment (Vecchiato, 2012b).



**Figure 5.** Framework for uncertainty, prediction and control: positioning foresight systems

Source: Vecchiato, 2012b

The basic features of foresight research, which determine the usefulness in the struggle with the dynamics and complexity of the processes occurring in the environment include:

- the variety of used methods, providing the diversity of sources of information, and the ways of obtaining them - which ultimately determines the quality of the source data and improves the accuracy of the information, thus influencing the improvement of predictability. According to Heger and Rohrbeck using the integration of multiple methods within the framework of strategic foresight you can cope with the uncertainty related to the interdependence of many factors (Heger & Rohrbeck, 2012). The diversity of the foresight methods used in this study reduces the imperfections of individual methods, allows the adjustment of a set of methods for certain tasks, integrates multiple perspectives and allows for the creation of a holistic vision of the new business areas, taking into account the

relationships between the different analyzed aspects, and in this way reduces the problem of the complexity of the environment;

- the socialization of the process of creating the future. Foresight involves customers, managers, owners, suppliers, contractors and employees in the process of creating a vision of the future, so that all stakeholder groups feel co-responsible for co-creating the future, thereby reducing the likelihood of changing the conditions arising from the close environment of the organization and the emergence of new unforeseen circumstances. In addition, the foresight, which is a platform ensuring the participation of the most important stakeholders and decision-makers has a positive impact on the perceived quality of the decision making process;
- the continuity of the process of shaping the future, characteristic of the foresight research, ensures that the participating organizations systematically analyze the current environment, adapt to changes and predict future changes. Moreover, the ability to develop the strategic foresight is vital for companies in the rapidly changing environment in terms of a continuous process of innovation (Costanzo, 2004);
- taking into account the unprecedented events e.g. wild cards the foresight research ensures that the organization is more aware of its surroundings and the strategic decision-making process is more resistant to future changes (Mendonca *et al.*, 2009);
- the fact the foresight research creates a safe space. The results are placed in distant future, which enables the participants to be more open to co-operation, understand their vision and develop of trust between the participants. Within their solutions, the participants of foresight processes are more innovative, more determined and willing to take risks;
- participants and the organization itself can explain and verify their assumptions, ideas, and values, which helps to explain their objectives and aspirations. As a result, the participants indicate (reveal) the future activities that are consistent with their values and goals;
- the fact that the foresight research ensures openness to unpredictable changes.

## 5. Conclusions

The literature review and study of Polish companies indicated that the level of perception of the complexity of and dynamics of the environment should determine the methods and tools for its analysis and ways to predict changes resulting in adaptive actions in the future. The dynamics of and the complexity of the environmental factors affecting the organization have both positive and negative effects on the functioning of the organization. So organizations should identify the environmental factors that stimulate them and are the source of their innovative activities. Due to the lack of simple methods for assessing environmental uncertainty and the lack of human resources foresight seems to be a good tools in the process of management of environmental uncertainty.

Future research on environmental uncertainty should focus on developing a detailed model of foresight studies at the organizational level, the aim of which would be efficient and effective management of environmental uncertainty in the context of its dynamics and complexity.

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