

BARRIERS TO THE EARLY RECOGNITION OF CHANGES IN AN ORGANIZATION'S ENVIRONMENT

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Abstract

Operating in a turbulent environment requires seeking and perfecting tools for information support of the strategic management process. The key activity in this area is to recognize and interpret weak signals and undertake adequate actions which will lead to the strengthening of the strategic position. However, in this process a number of barriers appear, which arise from the dysfunction of the organizational system and thus limiting its ability for early recognition of changes in the environment. In the following article, the author attempts to identify barriers arising in the organizational system on an individual, group and organizational level and their conditionings, as well as to indicate the framework directions of actions enabling improved effectiveness in the functioning of the system.

Keywords: *weak signal, early recognition, early warning, organizational barriers*

1. Introduction

Being of completely different character than only several years ago, the contemporary environment implies a high level of uncertainty for decision-making processes. The key skill to maintain balance (constituted by the adopted strategy) between an organization and the environment is an ability to react quickly to changes, and this basically depends on the ability of proper perception and understanding of the environment, not only in the dimension of the current events but first of all in the dimension of the anticipative projection of its states in the future. Within this scope, organizations can significantly improve their activities owing to support ensured to them by the early recognition systems which provide information desirable in strategic management.

The key measure of the effectiveness of such a system is its ability to recognize and interpret weak signals and, on the basis of the obtained

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information and built knowledge, to undertake adequate actions which will lead to the strengthening of the strategic position. However, in the processes implemented within the system a number of barriers appear, which arise from the dysfunction of the organizational system limiting its ability of early recognition of changes in the environment.

2. The origin, the essence and the notion of the early recognition of changes in the environment

Early recognition has military roots and its contemporary shape was influenced by the development of the cybernetic approach and the invention of radar which has become a metaphor of the systems identifying the symptoms of changes in the environment. More distinctly, the concept appeared in 1970s, simultaneously in numerous field, among others in geology, technique, but most strongly in three areas: military systems, medicine and economics. The success of applications on the non-business grounds brought about an attempt to translate the solutions worked out there to the business grounds, which was a response to the search for instruments enabling coping with the turbulence of the environment (Dworzecki 1985). Historically, the concept of the early recognition system was preceded by the concept of the early warning system, focusing only on an organization's activities towards the identification of risks in precisely defined areas. The early recognition notion itself was introduced to the reference sources on management in the 1980s with the indication that according to the strategic management principles, the observation of an organization's environment cannot concentrate only on the search for threats and on warning but should also recognize emerging chances (Kamasa 1992).

The early recognition system on strategic management grounds has its sources in the works by Ansoff (Ansoff 1985), his weak signals theory (Ansoff 1975) and his strategic issue management concept (Ansoff 1990). They gave rise to the development of the concept because in accordance with their assumptions, strategic surprise is signaled by weak signals that the traditional planning and control process, generally aimed at the extrapolation of the past, cannot detect anything. Metaphorically, the early recognition system can be compared to a radar which watchfully observes the environment to identify approaching objects. It points them out, even if there is still no certainty as to their kind, so as they can be monitored in order for recognition as accurately and as early as possible. Generally, the essence of early recognition of changes in the environment can be presented in the following way: (1) the occurrence of early information about a future problem, enabling its early recognition, (2) an analysis and assessment of the weak signal recognized in advance, (3) (positive/negative) interpretation of the significance of future events for the

implementation of the organization's strategy, (4) the transmission of a warning (negative interpretation – a threat) or encouragement (positive interpretation – an opportunity), (5) taking a decision related to the implementation of the solutions using knowledge resulting from the early recognition (Biliński 1990).

Therefore, the early recognition system (ERS) can be defined as a special information system whose goal is the anticipation of changes in an organization's environment, the reduction of uncertainty related to them and to inform top management about them early enough to make it possible to undertake appropriate actions in order to avoid strategic surprises. The specific character of the system consists of guiding information processes towards the perception and interpretation of weak signals being the symptoms of future changes in the environment, expressed with potential opportunities and threats. The early recognition system is a subsystem of the strategic management system in the area of environmental studies, informatively supporting the implementation of the strategic controlling function (strategic planning and control) via the provision of strategic information reducing the uncertainty of decision-making situations. As an information system, ERS acquires information, processes it, and once it is interpreted, passes it on to decision-makers, informing them about potential threats and opportunities carried by weak signals, foreseen long-term changes in the environment and their influence on the organization. By providing information about the future characteristics of the environment, it initiates redefinition of the strategy, leading to the better adjustment of the environment and the organization, safeguarding its long-term functioning and contributing to the improvement of the effectiveness of management.

3. The structure of the system of early recognition of changes in the environment

In accordance with the system methodology (Sienkiewicz 1988; Gharajedaghi 1999), four aspects of ERS should be assumed important and which require a separate description (Figure 1).

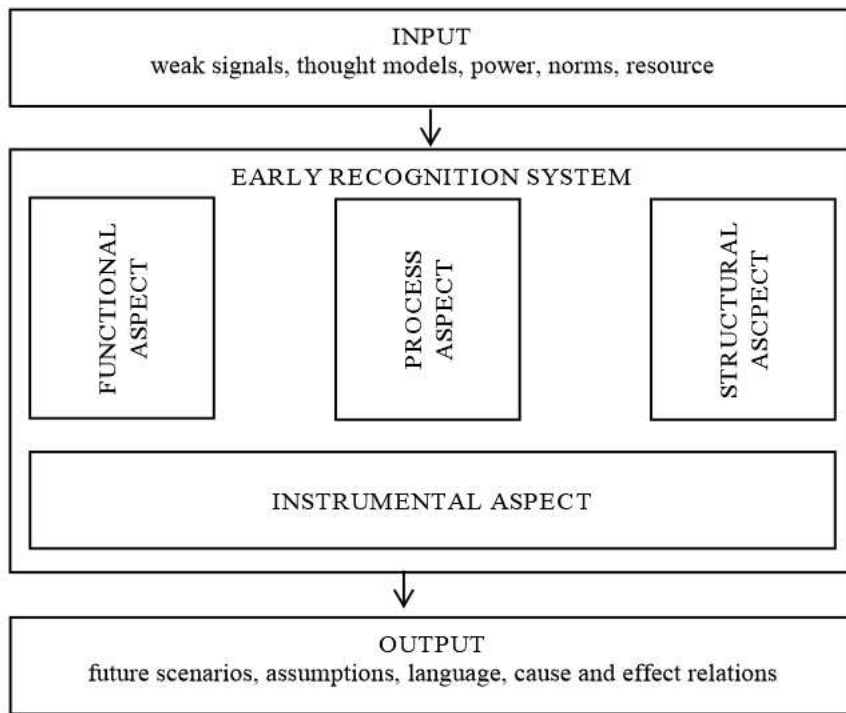


Figure 1. Aspects of the early recognition system

In the area of statics, it is a structural aspect (orders the system, defining its components and relations among them), and in the area of dynamics, these are the following aspects: the functional one (defines the results of the system activity, indicating goals, functions and the implemented tasks), the process ones (defines the sequence of the activities leading to the fulfillment of its functions), the instrumental ones (identifies the key tools supporting the activities)

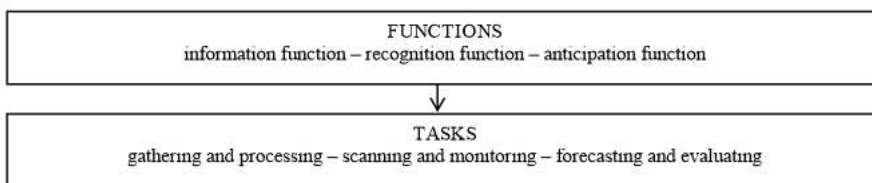


Figure 2. Functional aspect of the early recognition system

The basic aim of ERS is to systematically provide top management with information concerning anticipated changes which may enable taking more rational decisions in the strategic management process. This aim is implemented by the identification of long-term changes in the environment and an analysis of their influence on the organization early enough to secure time necessary to take adequate decisions. Apart from the basic aim, an additional aim should be related to the internationalization of culture supporting and stimulating the involvement of the entities in the information processes connected with obtaining and analyzing weak signals (Figure 2).

The aims defined above are fulfilled via functions which focus on three areas: perception of weak signals (diagnostic function), interpretation of weak signals (prognostic function), circulation of information and communicating future opportunities and threats (informative function).

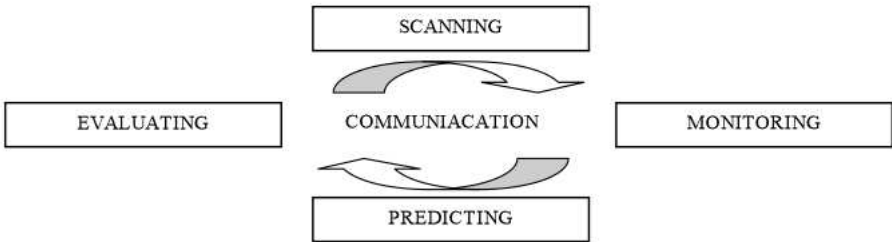


Figure 3. Process aspect of the early recognition system

Within ERS, we can distinguish two phases constituting its process character: the first one related to the perception of weak signals and the other one related to interpretation. They can be divided into five categories of activities. In the perceptive phase (obtaining information) it is scanning in search for weak signals and monitoring its evolution, and in the interpretation phase (processing) it is predicting potential opportunities and threats, as well as the assessment of their implications. The entirety is coupled with communication which creates an interactive system processing information inside and obtaining and passing information outside. The isolation of activities has an entirely analytical character, and scanning, monitoring, forecasting, assessing and communicating mutually intertwine and influence each other. It reveals the dynamics of this process which is evolving in the same way as the conditions of the environment are changing, implicating the sensitivity to a change and its early signs. This newly-produced knowledge generates new information needs, which leads to feedback (Figure 3).

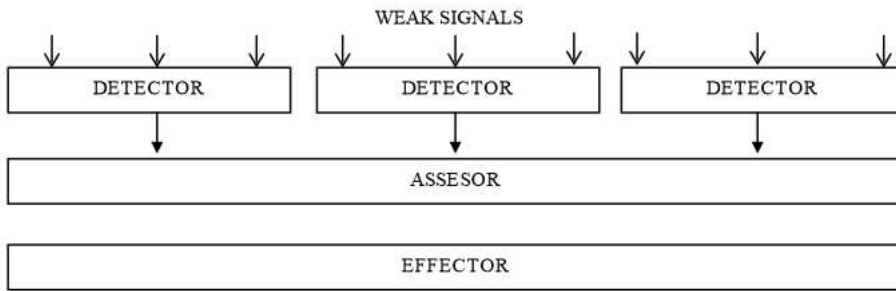


Figure 4. Structural aspect of the early recognition system

The structural aspect (Figure 4) concerns elements and relations which occur between them within the system and the way of relating and ordering them. The ERS components are: the detector which searches for and gathers weak signals, initially processes and passes the information considered relevant; the assessor which checks the information obtained from the detector, processes it and lists so that it could be used to inform about potential opportunities/threats; the effector informs about potential opportunities/threats and initiates activities which are necessary to be implemented; communication networks constitute information relationships among key elements due to the effectiveness of the whole system functioning, because they are responsible for the transmission of information.

All the activities implemented within ERS require the use of tools supporting information processes. Their two basic categories are: information technology and analytical methods. Information technology is supposed to ensure the effective access to information which is valuable from the point of view of the system objectives, as well as to improve communication servicing the interpretation and spread of information. Analytical methods support the processes of systemizing, analyzing and interpreting information and they are methods from the strategic analysis area (such as: scenario methods, Delphi method, war games, puzzle method) (Rohrbeck 2011, pp.146-14).

4. Conditionings of the early recognition system functioning

An important insight into mistakes made in the weak signals perception and interpretation is provided by the signal detection theory (Maruszewski 2001, pp. 85-88) which deals with the relations between the criteria used to the interpretation of signals and sensitivity to them, concentrating on the inner picture which appears in the observer's mind in relation with the perceived object (Stillman, Jackson 2005). The issue is insignificant in the case of

strong signals which are “easy” to interpret, but it is extremely important in the context of weak signals where their unambiguous assessment is impeded due to the vagueness of the message and high level of noise. The reception of signals is insufficient because their interpretation in classifying the signal is necessary. This may lead to errors related to the rejection of a weak signal or the reception of a noise. The attributes of weak signals (anticipativeness, qualitative character, ambiguity, fragmentariness) cause that the probability of making the same mistakes rises significantly (Knowles, Grove, Keck 1994).

What is the key to early recognition, is the proper identification of weak signals to generate knowledge about a change. At the same time, it is necessary to strive at minimizing the amount of both false alarms (which bring about necessary mobilization of means) and strategic surprise (which exposes the organization to the omission of important opportunities and threats). By perceiving and interpreting a weak signal we can:

- correctly assess an object (not) being a weak signal: *proper recognition* illustrates a right detection of actually occurring weak signals, and *proper rejection* represents a situation in which the signal was rejected and was a noise,
- incorrectly assess an object (not) being a weak signal: *a false alarm* is a situation in which the actual noise was treated as a weak signal, and *an omission* is an incorrectly reading of the signal, namely treating it as a noise (McGrew, Bilotta 2000) (Figure 5).

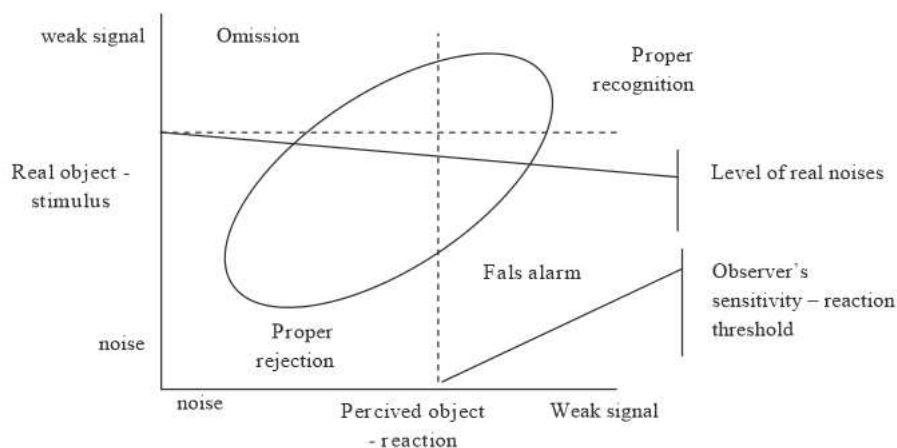


Figure 5. Weak signal detection model

Source: own elaboration with use of: (Lampel, Shapira 2001).

The correlation of levels: the observer's sensitivity (reaction threshold) and noises (weakness of signals), determine the "thickness" of an ellipsoid describing the relations which, in an extreme situation when they correlate completely, becomes a straight line (only the right answers occur). It is possible only at the detection of strong signals, and in case of weak signals the correlation level ("thickness" of the ellipsoid) depends on their weakness (Lampel, Shapira, 2001)

In the assessment of weak signals the observer may make mistakes of 1st and 2nd type. The first ones occur if the signal was treated as a noise. It is a more serious mistake because in consequence of it a possibility to use an important opportunity is lost or the organization is exposed to significant threats and has to cope with a crisis. The mistake of the second kind occurs when a noise is treated as a weak signal and it is a less unfavourable decision. When such a mistake is made on the level of an individual, there is always a chance to verify it within the framework of interpersonal interpretation on the group level. The rightness of recognition, thus the proportion of correct detections and false alarms is influenced by three characteristics:

- the relation of the signal strength to the noise strength – the correctness of detection increases with the signal strength, therefore three categories of actions are possible: taking the risk of making a mistake of second type, waiting for an increase in the signal strength, obtaining a bigger number of information enabling more correct assessment,
- the payoff matrix – defines factors influencing the consistence in taking a specific decision; it is necessary to create motivation to perceive weak signals and ensure positive feedback in the situation of proper detection, and safety in the situation of evoking a false alarm,
- expectations – depend on the frequency of the occurrence of a given type signals related to the observers' confidence, the atmosphere of active search increases chances for detection, and the situation of "stupor" impairs alertness (Maruszewski 2001, pp. 87-88).

The problem of the flow of weak signals in the organization and barriers they encounter before, having been received, they are changed into management activities is the deepening of the above approach focusing on the individual level. The research in this area was initiated by Ansoff who claimed that before any action is taken, information must "break through" the "filters" of strategic information. Ansoff (Ansoff, McDonnell 1990, pp 58-66) defines three barriers they must overcome: surveillance, mentality and power filters (Figure 6).

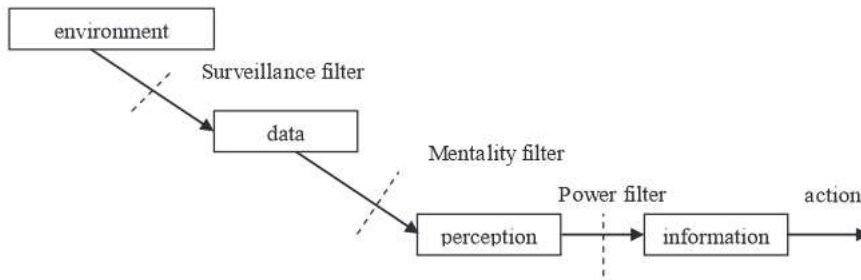


Figure 6. Filters of strategic information

Source: (Ansoff, McDonnell 1990, p. 66).

The surveillance filter defines the “micro world” of the observer and the system of its significance. Potentially, only those signals which are emitted by objects present in the observation field can be received. What is vital to open this filter is the diversification of entities observing the environment, giving them freedom, and a low degree of focus on specific areas.

The mental filter is connected with the necessity to reduce the immensity of information reaching us. It is based on the previous experience and if the information is not compatible with the existing interpretation patterns, the inclination to reject it grows. Realizing the existing interpretation patterns may enable greater flexibility and their evolution alongside the incoming information.

The power filter limits the use of new information because it strives to maintain the existing structures of power by blocking the information which can lead to their change. Ensuring safety of the entities observing the environment, increasing the level of formalization of the information and knowledge externalization opens this filter, limiting possibilities of an attack on the ones identifying weak signals.

Bearing in mind the above considerations, we can indicate three groups of barriers weak signals encounter before they are changed into adequate management actions: weak signals are not recognized (an individual), weak signals are not interpreted as relevant (a group), decision makers do not take necessary and adequate actions (an organization).

Individuals, as carriers of the ability to perceive the environment, are responsible for the search and the reception of weak signals, and these are their perception abilities which constitute the first barrier. When processing information in the conditions of uncertainty of the environment, they are based on mechanisms which are supposed to improve cognition, but at the same time they lead to bias in observing the environment and receiving the signals

coming from it. A number of detailed behaviours which block the reception of weak signals have been identified. These are, among others, perceptual set, selective attention, diminishing the significance of future opportunities/threats. Generally, problems at this stage are related either to the lack of access to the environment in which weak signals appear, or the rejection of weak signals. In the first case, it results from restrictions of perception and concentrating only on a fragment of the environment, and in the other case, from the inconsistency of the possessed interpretation patterns with the received data. What can help in overcoming this barrier is first of all realizing weaknesses and subconscious mechanisms, as well as broader search for information and more objective selection and assessment of them.

On the group level, where the constitution of the shared meanings which become the basis for undertaking actions takes place, group processes and their dynamics are of primary importance. They are the reason for which the already obtained information is not adequately interpreted and thus it does not constitute a signal informing about a change in the environment. It is mainly about group processes which lead to actions maintaining the integrity of the group, unification of thinking, or the conviction about the “indestructibility” of the group. In consequence, it leads, among others, to behaviours defined in the reference sources as group thinking, group polarization, increased inclination to risk. The processes are related to a tendency to maintain the existing interpretation patterns, that is the ways of perceiving the environment. Information which may disturb the existing *status quo* is rejected as the one which may threaten the aforementioned group integrity and safety. Copying with those problems basically means the identification of intra-group, inter-group and inter-organizational interactions, supported by the climate for open discussions guaranteeing safety for the ones who express their opinions questioning the existing assumptions concerning the shape and the direction of the evolution of the environment.

An organization effectively uses the early recognition potential only when it receives weak signals, interprets them as relevant and uses them to modify its actions. The last barrier on the organizational level is the decision paralysis which is first of all connected with two areas: structure and culture. Even most valuable knowledge about the direction of a change in the environment becomes worthless if there are no formal communication channels and ways of action enabling its use. On the other hand, if there is no information culture internationalizing the desirable behaviours with reference to information, the whole early recognition process has no chance to bring effects (Table 1).

Table 1. Barriers to early recognition of changes in the environment

Organizational level	Individual	Group	Organization
Stage of the process	Perception	Interpretation	Action
Information flow filter	Surveillance	Mentality	Power
Barrier	Weak signals have not been recognized as a sign of a future change	Weak signals have not been interpreted as relevant for the organization	Weak signals were not used since no adequate actions were undertaken
Conditionings of the lack of effectiveness	Perceptual set Sources of information Scope, frequency and flexibility of observations Interest in peripheries Involvement Approach to risk Noises	Interpretational patterns Interactions in the group and with the environment Quantitative perspective Intensity of interpretation Methods of analysis	Culture Information Level of formalization Scenarios Decision-making processes Information technology
Potential limiting actions	Cognitive openness Differentiating sources Increasing the frequency and scope of information Going beyond the area of the present scope Exploration of peripheries Involving everybody in the organization Risk management	Differentiating interpretational patterns Questioning the assumptions Permanence of interpretation Using integrating methods Increasing the frequency of interactions within the group and outside the group	Developing information culture Integration of scattered information System formalization Strategic management oriented at using opportunities
	Involvement and development of the best employees Building internal and external networks Information, knowledge, learning management Using information techniques in communication		

5. Conclusions

An identification of barriers blocking early recognition of changes in the environment on the individual, group and organization level is a starting point for further research aiming at their verification and studying their meaning. Moreover, it constitutes a contribution towards building suggestions for specific organizational solutions (structures, programmes, tools) supporting the process of eliminating the barriers and improving the effectiveness of the ERS functioning. Only the awareness of the existence of such barriers and the knowledge on the solutions possible to be applied can enable to get

anticipatory information and on this basis undertake an adequate action which will aim at the strengthening of the organization's strategic position.

Without elimination, or at least limitation of the influence of these barriers on the early recognition processes, the system will not achieve the desirable effectiveness and will not informatively supply the strategic management process.

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