

# Problem situations management in the process of enterprises' development within production and economic organizations

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## Abstract

The arguments for the use of enhanced and more effective techniques for managing problem situations emerging at different stages of enterprises' adaptation to the new challenging market conditions are given in the paper. The approach to managing the problem situations arising at the stages of the enterprises' pre-adaptation, co-adaptation and adaptation within production and economic organization is developed. The high inconsistency, low inconsistency and perfectly consistency zones between the enterprises' interests within the production and economic organization under co-adaptation are identified. The equation for inconsistency level between companies reduction during their adaptation process is introduced. The ratio for assessing the relevance of situation to emerge is obtained.

**Paper type:** conceptual article

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## Introduction

Dynamic development of the external environment makes it necessary to use enhanced and more effective techniques for managing problem situations emerging at different stages of enterprises' adaptation to the new challenging conditions of the market functioning and determine the possibility of economic entities adaptation to them.

The task for problem situations timely identification, management and removal in the process of enterprises' adaptation within Production and Economic Organization (PEO) is of urgency, and is caused by the fact that the pace of the company's external environment change faster than the management system reaction to them. PEO is a form of economic organization that incorporates different by their ownership, legal form, production and commercial activity industrial enterprises and other companies (e.g. banks, financial institutions, etc.) (Alieksieiev, 2002).

As a result, few problem issues should be taken into account:

- companies have significant discrepancy of technological, industrial and institutional capacity to the environment requirements,
- activity under uncertainty enforces enterprises to reconstruct internal industrial relationships and to improve the internal structure without proper consideration of the entity's external environment etc.

The aim of the research is the development of a methodical approach for identifying problem situations emerging at the enterprise within PEO under adaptation.

### 1. Development of an approach for managing problem situations emerging at the enterprises within PEO under adaptation

The issues of the enterprises' development are studied by many scientists. Among others, one should mention the following scientists who have made significant contribution to the research of the problem (or some specific aspects of its): Ackoff (1967), Ansoff and Sullivan (1993), Beer (1975, 1985), Feurer and Chaharbaghi (1995), Drucker (1993, 2001, 2006a, 2006b), Holling (1978), Khan and Khaliq (2014), Mason (2007), Pettigrew and Whipp (1991), Porter (1996), Alieksieiev (2002), Andrushkiv and Kuzmin (1995), Budnik (2002), Halushko, Halushko, and Lopatiev (2012), Hrynko (2011), Kuzkin (2008), Landina (1994), Lepa and Tymokhin (2004), Raievniewa (2006), Salomatina (2011), Stasiuk (2003), Trydid (2002), Turylo and Bohachevska (2014), etc.

The enterprise's development is a complex and multifaceted phenomenon. Besides that, the existing approaches to development management do not always take into account the adaptive characteristics of the companies and specific features of the industry

the enterprises belong to by pursuing the universality. These features have identified the need for developing new approaches to the effective development management.

By their nature and type the given problem situations emerge at different stages of the enterprises' adaptive development within a specified PEO. Therefore, approach, the use of which would make it possible to identify and correct problem situations emerging at the stages of the enterprises' pre-adaptation, co-adaptation and adaptation, is offered (Figure 1).

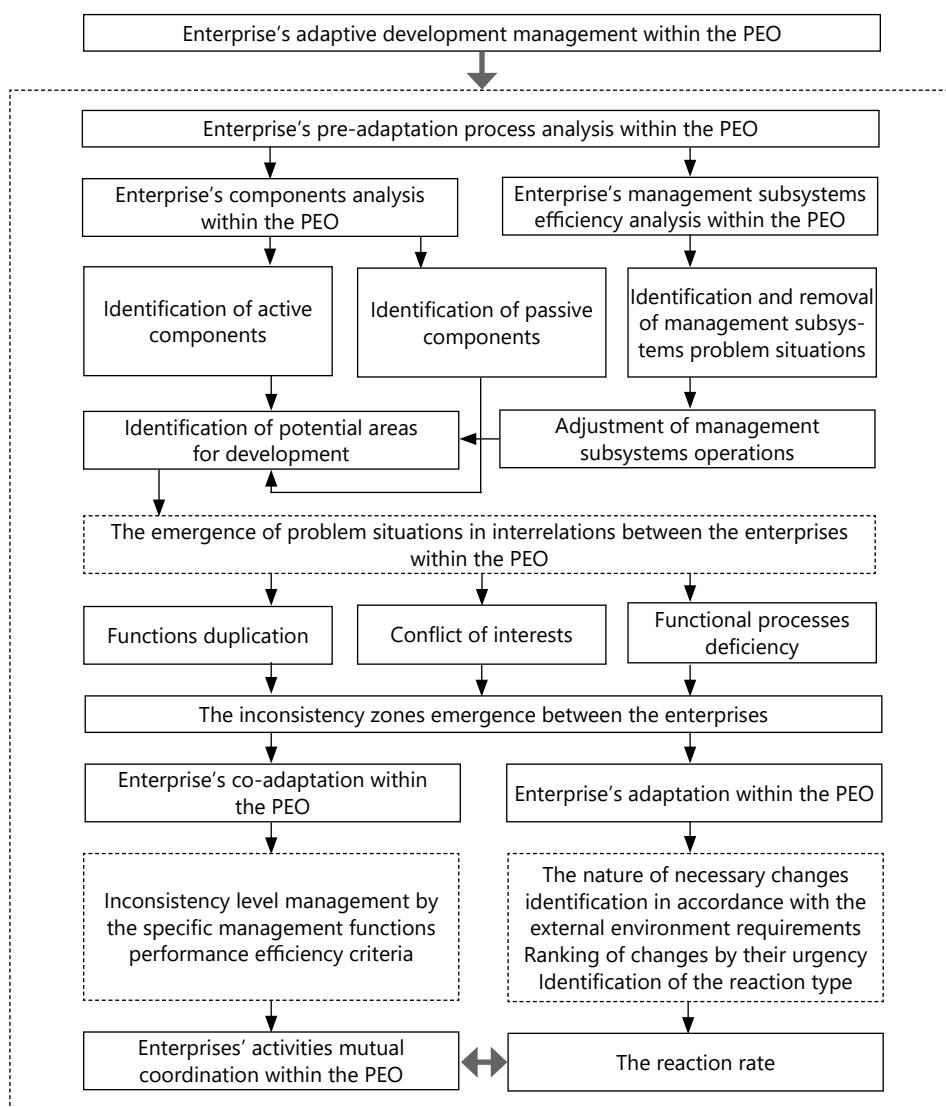


Figure 1. Problem situations managing approach in the PEO adaptive development process.

## 2. Pre-adaptation of enterprises necessity in the process of development

The industrial enterprise's adaptive development within the PEO at the pre-adaptation stage involves the use of analysis as a method for identifying problems that may emerge in the development of each company within the PEO based on its structural elements analysis.

The main objectives of such analysis at the pre-adaptation stage of the enterprises's development are as follows:

- ensuring the enterprise's managers with complete, timely and reliable information about the processes taking place at the enterprise during the pre-adaptation,
- timely prediction of positive situations, identification of adverse trends, assessment of their possible impact on the level of development,
- improving the enterprise's adaptive development potential management effectiveness,
- improving the competitive status of the enterprise and the PEO in general.

By analysing the components of the enterprises within the PEO and their management subsystems efficiency it is possible to conclude about the development level of the enterprise's functional identity and on which direction the company may potentially develop in terms of adaptation.

## 3. Identification of inconsistency and consistency zones between enterprises within the PEO under co-adaptation

However, there may be a situation where several companies within the same PEO will conduct identical functions, i.e. the duplication of functions and processes may take place. This fact, in turn, will result in a conflict of interests at the co-adaptation stage, when the tightness of the relationships and complementarity between enterprises are of great importance. Aiming at avoiding a possibility of such problem situations to emerge, it is necessary to develop a method for the uncoordinated interests of enterprises under co-adaptation (second stage) identification and elimination.

The inconsistency level between the enterprises at the co-adaptation stage in the initial phase of the regulation cycle has a maximum value (is shown in Figure 2 as features of low process effectiveness when circles 1, 2 and 3 don't intersect). At the same time, the effectiveness coefficient of the adaptive development management is at minimum value according to the consistency indicators (0,01–0,39 in obedience to the Harrington scale [Hroznyi, 2008]). The values of target charac-

teristics are found in the “high inconsistency” zone as a result of poor enterprises’ adaptive development management quality within the PEO.

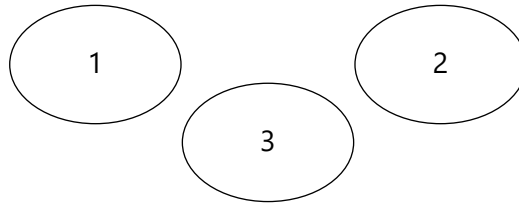


Figure 2. *High inconsistency zone between enterprises within the PEO under co-adaptation.*

The low inconsistency zone, shown as a partial intersection of circles 1, 2 and 3, is an effective and practically acceptable balance of interests between the enterprises within the PEO at the co-adaptation stage (Figure 3). It is characterized by the mutual understanding and support between the enterprises for their strong functional characteristics being identified at the pre-adaptation stage during the analysis.

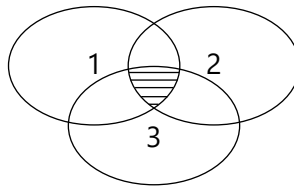


Figure 3. *Low inconsistency zone between enterprises within the PEO under co-adaptation.*

The perfect consensus zone is shown as circles 1, 2 and 3 being shaded and indicates the unattainable high level of interests coordination between the enterprises within the PEO (Figure 4).

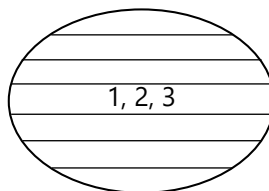


Figure 4. *Consistency zone between the enterprises’ interests within the PEO under co-adaptation.*

#### 4. Assessment of the adaptive development management under co-adaptation effectiveness

The adaptive development management effectiveness coefficient in terms of consistency can vary from a minimum or initial value to the normative (0.39–0.8) and then to the maximum one (0.8–1). For obtaining such a value it is necessary to improve the quality and intensity of the adaptive development management functions application according to the enterprises' interests consistency indicators within the PEO at the co-adaptation stage.

The level of consistency indicator and the adaptive development management effectiveness coefficient testify about the results of the enterprises' adaptive management process within the PEO at the co-adaptation stage. The target criteria of the specific management functions performance effectiveness at the co-adaptation stage are the indicators being the factors determining these results. The purpose and criteria for improving the enterprise's adaptive development management effectiveness within the PEO may be represented by the following inconsistency indicators during the co-adaptation:

$$\begin{aligned}LM &\rightarrow \min, \\MEM &\rightarrow 1, \\LC &\rightarrow 1,\end{aligned}\tag{1}$$

where:

$M$  – is the level of inconsistency,

$MEM$  – is the inconsistency management between enterprises within the PEO effectiveness indicator,

$LC$  – is the level of consistency.

$MEM$  is calculated as follows:

$$MEM = \frac{|GC_{avf} - GC_{pl}|}{|GC_{max} - GC_{min}|} \leq 1,\tag{2}$$

where  $GC_{avf}$ ,  $GC_{pl}$ ,  $GC_{max}$ ,  $GC_{min}$  – are the average actual, planned, maximum and minimum values of the target criteria of the specific management functions performance effectiveness at the co-adaptation stage respectively.

The reduction of the inconsistency level between the enterprises under co-adaptation aimed at maintaining the PEO viability as the system can be described by the following equation:

$$I_M = \frac{|MEM_{av,f} - MEM_{pl}|}{|MEM_{max} - MEM_{min}|} \leq 1. \quad (3)$$

## 5. Enterprise’s development management during adaptation to the external environment changes

It should be noted that in parallel with the co-adaptation stage of the enterprises within the PEO its adaptation to the external environment takes place. This fact involves the problem situations emergence in the process of necessary changes at enterprises implementation in accordance with the new external requirements.

By changes, Hamalei (2011b) defines the deviation of the system or environment certain characteristics in distant times. Changes in the environment result in the loss of the system’s adequacy characteristics (i.e., its construction). The loss of the adequacy leads to the reduced effectiveness and stability of the system.

Therefore, the dynamic adequacy postulate by Hamalei is of importance for our research. It states that for maintaining or increasing the effectiveness and stability of the system its internal characteristics reaction in response to the environment changes is required. For this to happen it is needed to identify and measure environment changes continuously and develop responses to them. Change management is the process of future changes forecasting and planning, evaluating the effectiveness and monitoring of their implementation (Hamalei, 2011b).

The change’s nature depends on the volume of production, prices, state of the environment, quality and cost of goods sold (Table 1) (Hamalei, 2010).

Table 1 *Interrelation between the changes’ nature and the reactions of enterprise within the PEO*

Changes’ nature	The type of reaction	Characteristics
Change in market demand	Change in product type	Passive and active
Change in tax policy	Change in enterprises’ sizes or quantity	By input variable
Change in consumers demand	Change in quality, marketing, production	Extreme
Change in competitors behavior	Change in pricing policy, strategy, volumes of production, markets	Strategic
Increasing number of personnel mistakes	Personnel retraining, selection, recruitment	Control

Source: based on Hamalei, 2010.

The task of managing changes is the choice of such changes' vector that will provide the desired (or maximum) effect under resources and costs constraints (Hamalei, 2010).

In Hamalei (2011a) the following patterns of the process of changes have been identified:

1. Pattern of adequate structure: the organization by its characteristics should be adequate to the characteristics of the environment; if the environment possesses  $N_c$  elements and  $R_c$  relationships, the system possesses  $N_s$ ,  $R_s$  correspondingly, then adequacy  $A$  is calculated by multiplying the functions of the elements belonging and relationships between system and environment.
2. Pattern of keeping the balance: any system is in equilibrium and if some problems emerge in the organization, the redistribution of resources takes place and the equilibrium is brought back. At the same time, the stability of the system is determined by its development, so in times of the system adequacy violation the changes aimed at innovative development occur.
3. Pattern of changes efficiency: result of the changes should exceed the costs incurred. The changes should cover key areas with the greatest effect.
4. Pattern of the feedback: a stochastic environment is unpredictable, so changes' management should be based on the feedback obtained on the basis of processing the results.
5. The law of conversion and conservation of energy: for the organizations' transformation and development to happen either internal changes (transformation of potential into the transformation kinetics) or external impact (market requirements, environment, senior management) should take place.
6. Pattern of social inertia: people's psychological conservatism results in the resistance to changes which are to be overcome by the use of specific technologies.
7. Pattern of the creativity and leadership necessity: the changes based on new ideas, creativity and leadership are the most effective ones.

The rate of changes is an important characteristic of the economic mechanism of enterprises within the PEO as the adequacy of its state to the current conditions of functioning depends on whether such a structure will take advantage of necessary economic methods and means for adapting to the changes in the external environment in time.

For the enterprise's adaptation management the ratio of the management accuracy and reaction rate to the external environment changes and the rate of macroenvironment changes are of great importance, i.e. the ratio of accuracy and changes reaction rate in the enterprise's internal environment compared with the rate and direction of changes in the external environment (Revenko, 2013).



However, during the adaptation of the production and economic system to the changes in the external environment the potential for problem situations emergence exists when the system can randomly react to different disturbances. With the aim of avoiding this, the ranking of events that are to be responded quickly is of need.

Based on Baranenko (2004), the assessment of the situation's relevance should be carried out by the following equation:

$$\delta T = \frac{\Delta T_{res}}{\Delta T_{red}} \quad , \quad (4)$$

where:

$\delta T$  – is the assessment of the situation's relevance,

$\Delta T_{res}$  – is the time remaining before the onset of situation,

$\Delta T_{red}$  – is the time required to take action concerning the targeted impact on the processes occurring in the external environment.

The application of this assessment method will improve the decision making process concerning the enterprises' adaptation to macroeconomic challenges effectiveness, save time and resources on the reaction which is required by the external environment due to the situation's relevance and will significantly facilitate the assessment of the adaptive measures being undertaken effectiveness during the enterprise's development within the PEO.

## Conclusions

Thus, the approach to managing problem situations emergence at the stages of the enterprises' pre-adaptation, co-adaptation and adaptation within the PEO is offered in the paper. It is determined that the industrial enterprise's adaptive development management within the PEO at the pre-adaptation stage should employ its structural components and management subsystems effectiveness analysis for identifying some problems emergence (e.g. duplication of functions and processes, conflicts of interest etc.) in the interrelation between the enterprises within the PEO. On the basis of such analysis the high inconsistency, low inconsistency and perfectly consistency zones between the enterprises' interests within the PEO under co-adaptation are identified. It is stated that these zones are to be regulated aiming at the interconsistency achievement. In order to maintain the viability of the PEO as a system the equation for inconsistency level between enterprises reduction during their adaptation process and the ratio for assessing the relevance of the situation to

emerge are obtained. The application of these ratios will result in the increase of the decision making process, concerning the enterprises' adaptation to macroeconomic challenges, effectiveness.

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