SMART MANAGEMENT OF THE BUSINESS ORGANIZATIONS – TRANSITION FROM A PROCESS-ORIENTED TOWARDS AN ANALYTICAL TOOLSET

Iliyan Bakalov

Abstract*: The growing need of smart management of the business organizations results from the fundamentally changed principles of the present-day economy, which ever more persistently is defined as digital rather than market economy, and is ever more often expressed as economy based on asset sharing rather than based on asset ownership. Therefore, in the emerging digital environment, the business organizations should address the new challenges, which they are facing – the need of quick data exchange, instant reaction, flexible production, including under individual orders, prompt execution, and efficiency of management. That would be possible only and solely if the economic entities have their management provided by cyber-physical systems, which, on the basis of artificial intelligence, form a new organizational ecosystem and upgrade the management concept. The development of management on the basis of artificial intelligence lays down on its fundament not the process, but the analysis, which requires outlining the conceptual differences between the traditional process-oriented management tools and the analytical toolset, necessary for the functioning of the smart management systems.*

Keywords*: smart management, business organizations, process-oriented toolset, analytical toolset.*

ITHEA Keywords*: K.6.1 Project and People Management: Management Techniques.*

Introduction

The typical for the 20th century automated management of the business organizations, and wide-scale advance in their governance of the computer systems and products, have determined the ever more evident need nowadays of introducing smart management in the economic entities. The already started Fourth Industrial Revolution has led to radical reinterpretation of the economic realities, blurring the borderlines between the digital and the material, as well as to the identification of new opportunities in respect to the usefulness of the goods and the human resources.

The smart management of the business organizations is a direct result from the changed economic mechanisms, restructuring the economic system from an “economy of ownership” to an “economy of sharing”, where of primary importance is not the asset ownership, but the access to assets [Temelkova, 2016, Temelkova, 2018]. The intensified digitalization in all the areas of public life in this dynamic economic reality requires the introduction into the business organizations of management based on artificial intelligence.

Why the Fourth Industrial Revolution imposes upon the business organizations a transition from a process-oriented towards an analytical toolset?

The increasing application of smart management in the business organizations leads to their fundamental restructuring related to the swift replacement of the computerized factory with the so-called “smart factory”, in which products and machines communicate with each other and products control their own manufacturing. Production at the smart factory is more flexible, faster and more efficient, since the machines in it are self-organized to a large extent, while the supply chains are automatically co-coordinated, and the orders are transformed directly into manufacturing information, feeding the actual production process. In spite of the unfavorable forecasts that human labour in the factories of the future will become redundant, people remain indispensable in the world of Industry 4.0. They are creative leaders and thinkers, who through their intelligence think all the processes and procedures over and generate software for the functioning of the smart factories. [Webel, 2016, Ematinger, 2017]

Under the conditions of global digitalization, instantaneous analysis is a primary factor, ensuring the realization of the strategy. In order to meet the new challenges of the global macro-framework, the toolset of Industry 4.0 is focused on responding to the specific and dynamically changing needs of the business units, operating in a highly changeable environment. [Köhler-Schute, 2016, Bauernhansl, 2013] Thus, the design of smart manufacturing solutions, which ensure entirely predictable processes and optimal results, is no longer possible without a transition in the corporate organization from a process-oriented toolset towards an analytical one.

The management toolset, being imposed by Industry 4.0 upon the business organizations, is not only a means for optimizing the existing IT-based processes, but also a stimulator for detailed analytical tracing of all organizational processes and their impact. That leads to an ever more evident advance of analytical activities in the economic entities, which are carried out by ultra-fast smart devices working in a network, and concentrating in themselves large bulks of data. The information sustainability of the business organizations is already guaranteed not only by the optimal running of the processes therein,

but also by the adequate operation of smart tools, which collect, process and analyze in real time data from the external and internal corporate environment, while, at the same time, they maintain the two-way oriented communication channels [Temelkova, 2017].

A conceptual framework of the transition from a process-oriented towards an analytical toolset in the smart management of the business organizations

The conceptual framework of the transition from a process-oriented toolset towards an analytical one in the smart management of the business organizations upgrades the basic foundations of traditional management. It is focused on generating a permanent feedback in the cyber-physical systems of a business unit. On this basis, the concept of transition towards a process-oriented toolset in the smart systems acts as a contemporary starting point for business development, and should be based on the conceptual principles of the PDCA cycle, which is used to outline the needs for improvements in the business units, and the PDSA cycle, which maintains the improvements and shows the ways for achieving them.

The analytical toolset applied in the smart management of the business organizations leads to a more adaptable, faster and more efficient development, while it puts an emphasis on the deviations in results as a major prerequisite for the permanent improvement of an economic entity's activities. It is focused on:

- ✓ planning a system of actions for achieving efficient results;
- ✓ carrying out the planned actions;
- ✓ verifying the obtained results for their compliance with the preliminary set requirements;
- ✓ adjusting the system of actions in view of maintaining acceptable quality of the results.

The analytical toolset in smart management generates a new model of management in a business organization by setting out five main tasks:

- ✓ planning, which comprises the definition of the goals and tasks of management, justifying the need of the defined tasks, determining the responsibilities, defining the method for realizing what has been planned, restricting the scope of action, elaborating a plan;
- ✓ realization – implementing the planned activities into the operations of the business unit;
- ✓ verification expressed in analyzing the execution of the implemented planned activities and evaluation of the achievements;

- ✓ exploring – this task is for studying and analyzing the achieved results in view of specifying the further actions;
- ✓ action – there are two types of action possible with the solving of this task: introducing the achieved higher level as a new standard in the business organization, or performing corrective and/or preventive actions to improve what has been achieved.

The conceptual differences between the traditional process-oriented toolset and the analytical one, providing smart management in a business organization, are expressed by priority in:

- ✓ examining the possibilities for achieving the strategic benchmarks by a business organization on the basis of the improvements in it;
- ✓ identifying the non-functioning elements in the management system;
- ✓ studying the principles of management, which prevent the achievement of dynamic and efficient growth.

Table 1. Differences between the traditional process-oriented toolset and the analytical smart toolset

	PROCESS-ORIENTED TOOLSET	**ANALYTICAL TOOLSET IN SMART MANAGEMENT**
nature	verification of the provision of the desired quality of the process	creating opportunities for achieving the desired quality by the organization
goal	achieving acceptable efficiency of the process	obtaining the best efficiency for the organization
emphasis	compliance	pursuing excellence
development	retaining the permanent improvement due to shortage of information for analysis	requires permanent improvement through analysis
feedback	only partial or indirect information is available about the exceptions in the process	available quantitative or other direct information about the exceptions in the process

The conceptual differences between the management tools, which are process-oriented and used in the organizations, which do not apply smart management, and the analytical smart toolset, applied in the business organization of the future, can be found in the fundamental differences in the nature, goal, emphasis, development and possibilities for a feedback, which they provide.

Conclusion

As a result of the conducted theoretical and practical-applied research, it can be summarized that in the present-day business organizations there is a growing inevitable need of transition from the traditional management, based on computer programs, towards entirely digitalized smart management, based on the development of cyber-physical systems, bringing higher added value to the economic entities. This requires reconsidering and changing the management doctrine, since the increasingly digitalizing economy puts essentially new requirements to the management concepts, approaches and tools, which, nowadays, should ensure fast, flexible and efficient management and production. Therefore, the analytical toolset in the organizations from the business sector is ever more seen as a basis of smart management, since it promotes organizations' development on the grounds of the continuous improvement of their activities and enables the upgrading of the cyber systems with artificial intelligence.

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Authors' Information

Iliyan Bakalov *– Ministry of Economy; senior expert; e-mail: ilian.bakalov@abv.bg*

Major Fields of Scientific Research: management, manufacturing