PROCESS-BASED MANAGEMENT METHODOLOGY ANALYSIS COMPLETELY COVERING BUSINESS PROCESSES OF AN ENTERPRISE

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ABSTRACT
The formation of a full-fledged enterprise management system requires detailed modeling and definition of product interconnections of all business processes of an enterprise. The solution of this problem is problematic for large industrial enterprises due to their specific features. For this reason, the existing methodologies of process management which completely cover the business processes of an enterprise, acquire particular urgency. The most common of these are "Rummler-Brach" and CMMI methodologies, as well as the process management methodology for an enterprise, embedded in the software products "1S", BAAN, and SAP. The paper gives an analysis of the above-mentioned methodologies, reveals their advantages, disadvantages and application features. The disadvantage of the "Rummler-Brach" methodology is the methodological problems of calculating labor productivity in supporting business processes. The disadvantage of CMMI methodology is the absence of a rigid algorithm for the development of the process control system. The main lacks of management based on software products is a partial or complete inconsistency between the actual business processes of an enterprise and the "reference" business processes embedded in the software product. These shortcomings of methodologies, completely covering the business processes of the enterprise, do not allow providing systemic management of an enterprise. Their common shortcoming is the problematic definition of explicit relationships between the measures proposed within the framework of methodologies and the economic performance of an enterprise as a whole.

Keywords: process management, industry, management philosophy, machine building, management methodology.

INTRODUCTION
The most popular in developed countries are the following process management methodologies covering the main and auxiliary business processes: "Rummler-Brach", CMMI and process management methodologies embedded in automated information systems of enterprise management. The full scope is understood as the possibility of encompassing all business processes of an enterprise within the methodology. Completely described and automated business processes of an enterprise form the basis for effective management of an enterprise using economic and mathematical methods. We consider the above-mentioned methodologies.

MAIN PART
"Rummler-Brache" methodology

This methodology developed in the 1990s by G. Rummler and A. Brache is based on the concept of employee productivity. The effectiveness of each employee's work is determined on three hierarchical levels: a) a workplace; b) business process; c) organization. At the same time, at each of these levels, the result of labor is assessed from the perspective of goals, documentary support and a system for managing labor productivity [1].

For clarity, an evaluation model called "nine box model" was developed (Table 1).
<table>
<thead>
<tr>
<th>Estimated position</th>
<th>Objectives of the organization</th>
<th>Documentary support</th>
<th>Labor productivity management</th>
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Table. 1. Nine box model

The general algorithm of organization management on the basis of the "Rummler-Brach" methodology is the following [2, 3]:

a) A company determines the target segments of the consumer market;

b) A strategy is developed to most effectively meet the needs of customers and the business model for its implementation;

c) The internal environment of the organization is mobilized for strategic and tactical purposes;

d) Regulatory documents of the organization and the system of motivation are updated taking into account the specified goals;

e) Regular monitoring of labor productivity and efficiency at each hierarchical level of the organization, as well as improvement of business processes.

Advantages of the methodology: a) it allows strategic plans of the company to implement in tactical actions by developing key performance indicators for each workplace; b) it allows the dynamics for each workplace efficiency of the main business processes to evaluate in terms of direct costs through a clearly understood economic indicator; c) it forms an information basis for benchmarking analysis; d) it allows to carry out system management of an enterprise; e) it allows to indirectly assess the contribution of each workplace to the final performance indicators.
Disadvantages of the methodology are: a) one-sided and incomplete analysis of the company's performance through the prism of labor productivity; b) the lack of methods to improve the parameters of business processes and its structural elements; c) the lack of mechanisms for determining the productivity of workplaces in auxiliary business processes.

**CMMI METHODOLOGY**

CMMI methodology was developed in the 1980s by the Software Engineering Institute. The main purpose of the methodology is the introduction and development of process management in an enterprise.

In accordance with this methodology, five levels of process management development are distinguished [4]:

1. Basic. Business processes are poorly understood, the costs of their implementation and results vary.

2. Manageable. Separate business processes are described.

3. Determined. All business processes of the organization are described. At the second and third level of maturity of business processes, one of the notations for business process modeling is used.

4. Quantitatively-controlled. At this level, all important parameters of business processes are identified, their quantitative characteristics are determined, the reference values of these parameters are set, and management decisions are taken based on the deviation of the actual values from the reference values. At this level of process management maturity, the Lean Production or Six Sigma methods are used.

5. Optimized. The main emphasis is made on improving the business process.


The advantages of the methodology are: a) the ability to determine the level of development of the process management system; b) the universality of the methodology, the possibility of its application in any field; c) full coverage of business processes.

The disadvantages of the methodology are: a) the lack of original methods for analyzing production processes; b) the lack of the ability to form a complete system of enterprise management; c) lack of automation of business processes.

**METHODOLOGIES OF PROCESS MANAGEMENT OF AN ENTERPRISE INCORPORATED IN THE SOFTWARE PRODUCTS IS, BAAN, SAP.**

Development of these software products is due to the following factors:
1. Development of information technologies and computer equipment led to the possibility of automating business processes previously performed manually or with the use of simple software. This allowed labor productivity to increase by an order and to reduce overhead costs [7].

2. The need to take into account the requirements of regulatory legal acts of the state. This factor is relevant all the time, as the legal and regulatory framework is regularly changed and supplemented. As to a mass software product, the cost of accounting changes in regulations for an individual user is acceptable in comparison with the option to track and account for these changes independently [8].

3. The need to support the adoption of managerial decisions. Within the framework of these software products, it is possible to collect information, generate reports and analytical materials with a minimum participation of employees [9, 10].

4. The ability to integrate with other software products and technologies (including databases, Web sites) into a single management system, what increases the capabilities of the enterprise management system [11].

All these software products were developed using the following algorithm [8, 12, 13]:

1. The company-developer modeled the "ideal" algorithm from its point of view for executing the business process.

2. Within the framework of this algorithm, separate works of the business process were singled out, which were important from the point of view of a potential consumer.

3. The ability to account for the performance of these works (based on the company's primary documents) was implemented in the software product.

4. The opportunity of analytical processing of the information for the certain period of time with a breakdown into interesting features is generated.

This approach to software development predetermined the advantages and disadvantages of process control methodologies based on programs.

The advantages of the methodology are: a) high speed of implementation at an enterprise; b) high economic efficiency; c) software product support by its manufacturer in the updated state.

Disadvantages of the methodology are: a) partial or complete inconsistency of the actual business processes of an enterprise and the "reference" business processes embedded in the software product; b) rigidly structured standard configuration of the programs, which in some cases does not allow analyzing information in the required sections; c) the initial investment in software products can be very high (it all depends on the configuration and inherent capabilities); d) the transition from one software product to another of the above mentioned is very expensive, what leads the company to be "software dependence". These shortcomings lead to the need to invest additional resources in support of the information system of an enterprise by qualified IT specialists.

**METHODS**

In the course of the research, the following methods were used:

1. Selective analysis of specialized literature with a high citation index for the subject matter indicated in the title of the paper. In particular, information on the process management methodology was gathered; it
covers the main and auxiliary business processes: "Rummler-Brach", CMMI and methodologies for automated information systems of enterprise management.

2. The formed array of information was systematized for the purpose of its further analysis. In particular, algorithms for the implementation of these methodologies were studied.

3. A comparative analysis of the collected information on the criteria determined by the author has been carried out to identify the merits and weaknesses of the methodologies examined and to assess the feasibility of their practical application.

4. The author's interpretation was given to the results of the study, and conclusions were drawn.

RESULTS
On the basis of the foregoing, the following conclusions can be drawn:

1. The considered process management methodologies that fully cover the business processes of an enterprise have their own specific features:

1.1. The methodology "Rummler-Brache" focuses on a general analysis of labor productivity, which makes the process of making managerial decisions somewhat lopsided. This leads to limiting the capabilities of the enterprise management system. An essential shortcoming of this methodology is the methodological problems of calculating labor productivity for supporting business processes.

1.2. The focus of CMMI methodology is the implementation and development of the process management system. Applied methods allow the process management development level of an enterprise to determine and to indicate the direction of further efforts for its development. The main drawback of the methodology is the absence of a rigid algorithm for the development of the process control system.

1.3. The methodologies of enterprise management incorporated in the software products 1S, BAAN, SAP allow the business processes of an enterprise to automate in a short time and at an acceptable price. The main disadvantage of this approach to enterprise management is a partial or complete inconsistency between the actual business processes of an enterprise and the "reference" business processes embedded in the software product. This leads to the need to modify software algorithms and additional costs.

DISCUSSION
The reason for the study is an objective need to improve the management systems of enterprises and the development of theoretical bases for their management.

As the process approach to management is dominant today, it was decided to analyze process methodologies that completely cover business processes of an enterprise with a view to their further improvement.

In our opinion, methodologies which are used in automated control systems are of the greatest interest among the methodologies considered above. This is due to the massive use of specialized platforms, such as BAAN, SAP. The 1S platform is widely used in Russia and the CIS countries.

These software products accumulate all regulatory requirements from the state; they implement modern theoretical bases of management and decision-making. Hundreds of thousands of analysts and programmers fine tune the business processes laid down by development firms to the specific requirements of certain consumer enterprises.

In our opinion, the attention of researchers should be focused on solving methodological problems in such software products including the problems identified in this paper.
CONCLUSIONS
The identified shortcomings of methodologies completely covering business processes of an enterprise do not allow systemic management of the enterprise to provide. Their common shortcoming is the problematic definition of explicit relationships between the measures proposed within the framework of methodologies and the economic performance of an enterprise as a whole.

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REFERENCES