

PROCESS APPROACH - A CONDITION FOR AUTOMATED CONTROL OF THE BUSINESS PROCESS IN THE INDUSTRIAL COMPANY

Ass.prof.dr. Svetlana Lesidrenska¹,
PhD Siyka Demirova²
Ass. Marina Marinova³,
TU-Varna, Bulgaria, Bulgaria^{1,2,3},

Summary: The paper deals with the characteristics of the process approach and on that basis looks for identical points to form the requirements and create conditions for automating business processes. It analyses the characteristics of the business process life cycles and offers a solution on how to make management more efficient and more competitive. It is proved that management of business processes has to be realized to its full cycle, and then identify those of them that can be automated. Means for automated business process management in industrial enterprises are proposed.

Keywords: *process approach, automated management, business processes*

General requirements

The present stage of development of industrial enterprises is characterized by globalization of the requirements related to product quality and the need for sustainable growth as well as a strive for a highly effective application of recent advances in the field of business processes including their automated management.

Sustainable trends towards globalization of economy create favourable preconditions for the accelerated implementation of solutions for automated information processing and expansion of opportunities for coverage of more business processes for automated control. Therefore this will lead to solving a wide range of tasks related to improved productivity, product quality, sustainability and flexibility of business processes, reduced costs, create competitive advantage and faster realization of the product on the market. On the other hand, the growing consumer demands and increasing competitive pressure in world markets, determine at the beginning of the XXI century the need for a radically different approach to these issues and in particular to the entire business

process. It is a global trend that product manufacturing becomes extremely complicated, both in terms of their internal structure, user and satisfied functional requirements. To the above mentioned we must add the growing needs for complex consumer issues, the resolution of which becomes more difficult by conventional means. Therefore, the need for a comprehensive approach to review, regulate and manage the business processes of the present stage of development of industrial business is the best alternative to control and effective management.

Process Approach

Process approach is an opportunity for modeling, implementation and monitoring of processes. That means study, design, implement, maintain, analyze and optimize distributed processes that are external to the industrial plant, involve multiple sub-processes and operate at different technological levels. The dependencies that characterize the nature of the process approach are shown in Figure 1.

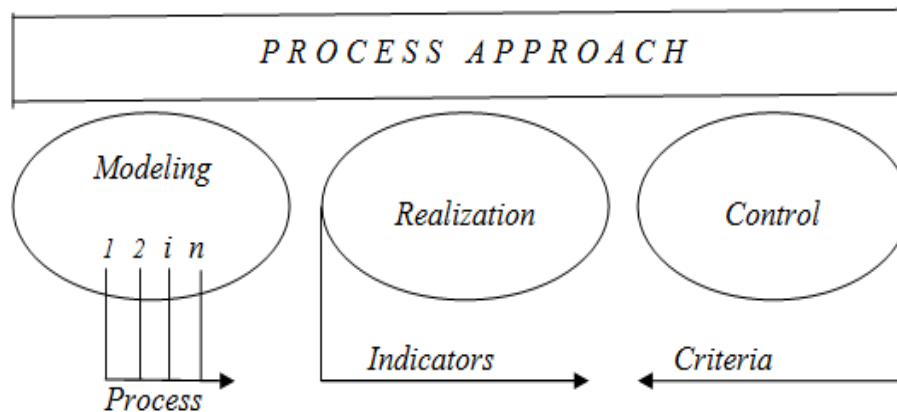


Fig. 1. Process Approach

Modeling involves the creation of a conceptual model including tasks and necessary resources. The model includes planning, virtual representation (imitation) and preparation for implementation, too.

Implementation includes all activities contained in the implementation process (procedures, requirements, development, analysis, corrections, etc.). Monitoring includes full control over all parameters forming performance - with analysis, conclusions and decisions.

Nature of business processes and exploring them as a system. The term business process is a concept based on the need

for a comprehensive review of the problem as a business system with automated process control. Conditions are created to integrate different types of business information flows in hierarchical structures in a system that is already subject to control. Automated process control means individual businesses can be brought into position to work faster, better and cheaper, leading to an overall improvement of the corporate status of the industrial enterprise. The exploration of business processes as a system of business information flows is given in Figure 2.

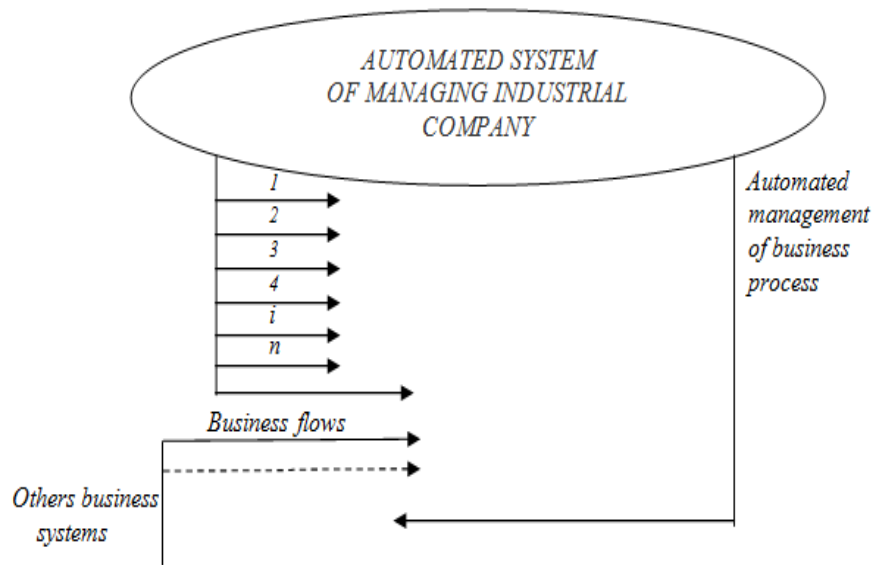


Fig.2.Business informatinal flows's system

Role of information technologies in the systematic development of business processes

Information technology is increasingly being adopted as a key factor for the development of modern society. Technical and social development is built on communication and information technologies. On the other hand, stimulated by global priorities technological solutions fully reveal their potential only in the world economic environment. Therefore we live in a period of great economic and social changes. Common global networks and systems from separate parts and components were created and in them global interests increasingly prevail over national ones. As a result of this, specific international priorities are formed in which the world appears as a single economic entity or common ground for carrying out technical and economic growth. This is explained by the transition from industrial society to knowledge society, which further complicates intertwining IT business processes in an industrial complex hierarchical structure. In the future it is not the increasing number and complexity of business processes that will be the most important issue but the creation and use of knowledge about their arrangement in a system that defines the possibility of effective automated control.

This business process will continue to evolve and it will increasingly be determined by the constraints of scale development and application of communication and information technologies

imposed by the globalization of business processes and activities in the industry and market requirements. The latter means focusing on major scientific resources and investing huge funds in research and experiments to fully automate IT business processes.

Information technology will continue to develop and further improve both the hardware and the software part. We will continue to spread and enhance the principle of developing and implementing the software products. The application of expert systems and the artificial intelligence will further develop. The principle of developing and implementing the software products will continue to spread and enhance. We have already created opportunities for comprehensive and integrated automation of information and other activities. PCs are expected to give way to new kinds of devices targeted at average consumers, that will serve their social motive, which is a turning point in its development. All these changes will radically alter the concept of scope, development and automation of business processes in industrial enterprise.

Automation of business process management

Automated management of business processes can be regarded as a complex system solution only in terms of system approach, because individual business processes are parts or elements of other subsystems, or the total automated system of industrial enterprise. This is best illustrated in Figure 3, showing relationships between process components.

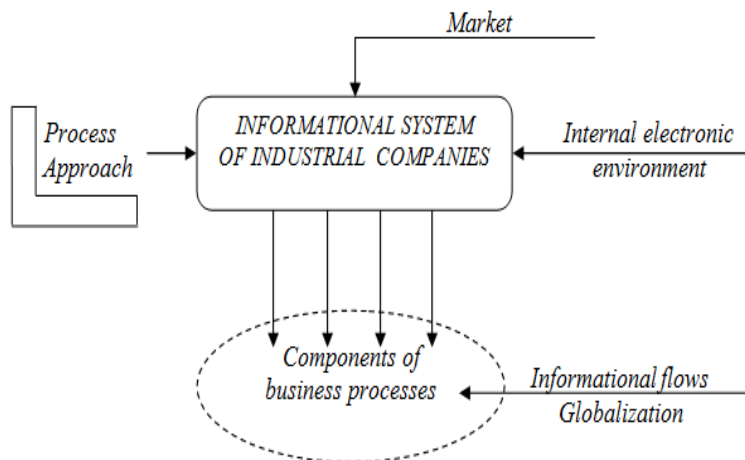


Fig.3. Interaction between process components

The scope of the automation of business processes is limited in the area of process description, which identifies the different process functions, procedural rules and corresponding information required to manage the process. Automated process is a

combination of one or more related procedures which mutually implement automated business task. This business process is shown in Figure 4.

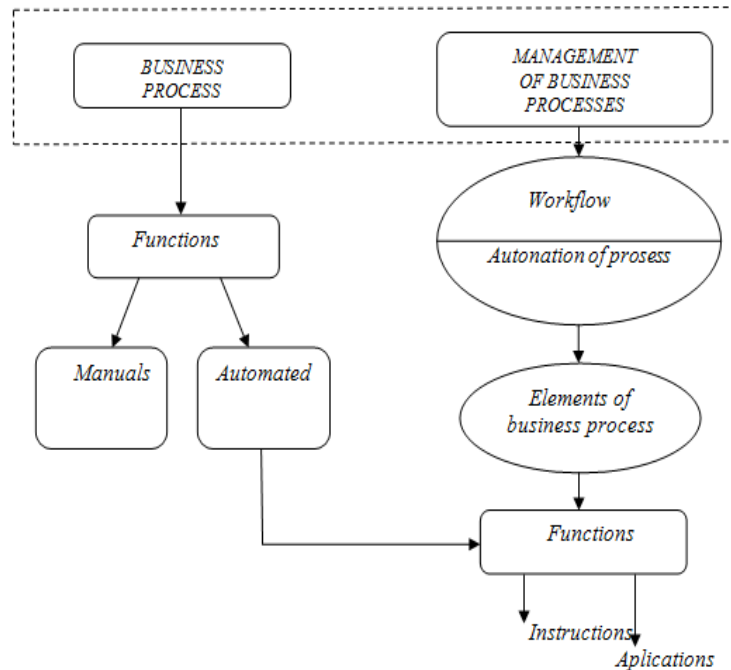


Fig. 4. Automated business process management

In automated systems business processes consist of multiple functionally dependent elements that are logically connected so as to provide automatic control of the entire business process. Then the functional dependence of automated business process management accepts the form:

$$FS = (Br + Ba) \quad (1)$$

where:

FS - automated business process management;

Br - manual business process management;

Ba - automated business processes.

Manually managed business processes are those that are managed entirely by people without the intervention of an automated management system (instructions, orders, signatures, etc.). But they are also part of the management of industrial company.

Automated business processes include all the automated processing of information in the system of management of the industrial company. The level of automated control, or the degree of business processes automation will be determined as follows:

$$K = \frac{B_a + B_r}{B_a} \quad (2)$$

where:

K - degree of automated business process.

The system of workflow which provides a high degree of automation of business processes in the industrial company, has already been well established in practice.

Conclusions

1. The analytical characteristics of business processes and process approach are explored.
2. Solutions for effective management of business processes with automated management system are proposed.
3. Influencing factors on workflow business processes with the opportunity to automate them were studied.

This publication was made thanks to the participation in the project BG051PO001-3.3.06-0005 "Development potential PhD students, young scientists and graduate students of engineering at the Technical University of Varna and its contribution to developing an economy based on knowledge."

Bibliography:

1. Freeman, E., McVea, J., A Stakeholder Approach to Strategic Management, University of Virginia, 2001
2. Kenneth, S., Bruce, B., Research design and methods: A process approach, NY, 2002
3. Vathanophas, V., Business process approach towards an inter-organizational enterprise system, 2007
4. <http://www.workflowpatterns.com/>