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BUSINESS PROCESSES IN PRESENT-DAY COMPANIES PERFORMED BY IT SYSTEMS

Introduction

All companies, regardless of the sector, perform multiple processes. Some of the processes are crucial for their core activities while some are auxiliary. Some of them are a part of processes that are more complex. Some processes are local And some take place in the whole company. However, there is no doubt that all of them have to be continuously monitored and improved. The purpose of every process in a company is to ensure an efficient and smooth performance of tasks so that the company as an organization can complete its business objectives.

Currently, IT systems are an inseparable element of every company. The crucial functions of IT systems include collecting, processing, storing and presenting information. At the beginning of the development of IT systems, organizations used numerous systems that worked independently and were responsible for particular areas of company activities. The systems were based on different standards, data sets and formats, which made it either difficult or impossible to share the data between them. The same data had to be frequently entered separately to each of the systems within the company. Over time, the system integration or the development of integrated systems turned out to be the solution to the problems. Integrated IT systems can comprehensively accomplish all business processes in organizations.

The aim of the article is to present the classification of IT systems, to describe business processes and to analyze the implementation of IT systems in business processes as illustrated by a modern company.

1. Classification of IT systems

IT management systems are usually complex. They consist of numerous components and have several functions. In order to develop a comprehensive solution that suits the specificity of a company, the components and functions in a system should be appropriately configured, parametrized and combined with each other[1].

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[1] J. Jurek, *Wdrożenia informatycznych systemów zarządzania*, Wydawnictwo Naukowe PWN SA, Warszawa 2016, p. 11.

The following IT systems can be grouped by functionality classes:

- *Business Process Management* (BPM),

- *Enterprise Resource Planning* (ERP),

- *Customer Relationship Management* (CRM),

- *Business Intelligence* (BI),

- *Warehouse Management System* (WMS),

- *Manufacturing Execution System* (MES),

- *Document Management System* (DMS),

- *Supply Chain Management* (SCM).

BPM (*Business Process Management*). A BPM class system allows comprehensive management and optimization of company business processes[2].

ERP (*Enterprise Resource Planning*). An ERP class system combines IT solutions (a modular structure) that support company management in all areas of its activities in a comprehensive way [3].

CRM (*Customer Relationship Management*) . The purpose of a CRM class system is to improve broadly understood business processes between the supplier and the customer[4].

BI (*Business Intelligence*). A BI class system was developed to support decision-making processes at management levels by providing company data in the form of reports and analyses adapted to recipients[5].

WMS (*Warehouse Management System*). The system supports management, registration and monitoring of warehouse processes. It covers the services in all stages of the supply chain[6].

MES (*Manufacturing Execution System*). The system supports the optimization of company manufacturing operations from ordering to manufacturing the final product[7].

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[2] Ibidem, p. 46.

[3] J. Auksztol, P. Balwierz, M. Chomuszko, *SAP Zrozumieć System ERP*, Wydawnictwo Naukowe PWN SA, Warszawa 2012, pp. 2-3.

[4] A. Bytniewski, *Podsystem CRM* [in:] A. Bytniewski (ed.) *Architektura zintegrowanego systemu informatycznego zarządzania,* Wydawnictwo Akademii Ekonomicznej im. Oskara Langego we Wrocławiu, Wrocław 2005, pp. 142-143.

[5] K. Matouk, *Podsystem business intelligence* [in:] A. Bytniewski (ed.), *Architektura zintegrowanego systemu informatycznego zarządzania,* Wydawnictwo Akademii Ekonomicznej im. Oskara Langego we Wrocławiu, Wrocław 2005, p. 159.

[6] *WMS- System zarządzania magazynem UNIS | AUTOID*, https://www.autoid.pl/platforma-unis/zarzadzanie-magazynem-unis-wms?gclid=CjwKCAiA9vOABhBfEiwATCi7GP_vWUgg1lY3HHl9r9ujnVyyMQ3_K-42GUt2NYOsThFfuBvjV-jvvBoCl24QAvD_BwE (accessed: 05.09.2020).

[7] *Charakterystyka systemów MES*, https://docplayer.pl/11839069-3-1-charakterystyka-systemow-mes.html (accessed: 05.09.2020).

DMS (*Document Management System*). The system is used to collect, store and manage documents in a digital form or in the form of images of paper documents[8].

SCM (*Supply Chain Management*). The system supports the coordination and management of the flow of materials and goods in the company[9].

2. Characteristics of business processes

Process is a term with numerous meanings; the concept is defined in many areas but in the field of business processes one should refer to definitions that concern activities that are performed in organizations.

According to the ISO standard, a process is a set of interrelated and/or interacting activities, which results in the transformation of inputs into outputs with the application of resources[10].

The factors that describe a process at the highest level of generality are[11]:

- the name of the process,
- input data (e.g. raw materials, semi-products),
- output data (e.g. the final product/ service),
- external factors (constraints, resources).

A business process can be defined as "a structured, measured set of activities designed to produce a specified output for a particular customer" [12].

Other definitions of a business process mention tasks that are defined and accomplished in an adequate order and are necessary to achieve the organization's business goals, and sequences of tasks that are logically linked in time, which results in the accomplishment of work that makes it possible to reach business goals by a process-oriented company[13].

Process management is an activity that is related to the optimization of the structure of organizational elements. This consists in the rejection of ineffective operations that do not add

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[8] *ERP, MRP, CRM… - w gąszczu systemów informatycznych*, https://sykom.pl/erp-mrp-crm-w-gaszczu-systemow-informatycznych/ (accessed: 05.09.2020).

[9] A. Dudek, *Systemy informatyczne zarządzania* [in:] A. Dudek (ed.), *Systemy informatyczne zarządzania Microsoft Business Solutions Navision,* Wydawnictwo Uniwersytetu Ekonomicznego we Wrocławiu, Wrocław 2011, pp. 22-23.

[10] M. Grzesiak, *Modelowanie procesów biznesowych z wykorzystaniem narzędzi iGrafx Process 2015*, Wydawnictwo Politechniki Gdańskiej, Gdańsk 2018, p. 9.

[11] M. Piotrowski, *Procesy biznesowe w praktyce. Projektowanie, testowanie i optymalizacja*, Wydawnictwo Helion, Gliwice 2014, p. 15.

[12] T. H. Davenport, *Process Innovation Reengineering Work through Information Technology*, Harvard Business School Press, Boston 1993, p. 142.

[13] M. Grzesiak, *Modelowanie…* op. cit., p. 10.

value to the enterprise and in leaving the ones that create the highest value added[14]. "The main objective of process management is to coordinate process goals with the organization's business goals, to look how to improve processes and to determine measurement methods to facilitate the monitoring of processes in order to enhance them continuously and optimize"[15].

The basic elements that define a process are[16]:

- operations – activities performed to complete a process,
- trajectory – the method, order and conditions for subsequent operations,
- actors – who perform particular operations,
- events –they directly influence a process; there are events which:
  - initiate,
  - release and suspend the execution of selected operations,
  - release error procedures,
  - link the process with other processes,
  - are the result of a process,
- control elements – such as measures of quality, load balancing, statistics, etc.

3. Business processes in the Sagitum company performed with the use of integrated IT systems

Sagitum is a company operating in the areas of IT and business and technology consulting. It started its operations on the market three years ago. It has human resources with many years of experience in IT industry. Their responsibility is to provide innovative and modern IT solutions supporting business processes of the company's clients. As a result of the staff know-how and the scope of competencies, the company can promptly react to the expectations of its clients and provide them with the required IT tools. Sagitum cooperates with several software companies and is their authorized partner. Table 1 presents examples of business processes that are performed in the company.

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[14] P. Grajewski, *Organizacja procesowa. Projektowanie i konfiguracja*, Polskie Wydawnictwo Ekonomiczne, Warszawa 2007, p. 56.
[15] M. Grzesiak, *Modelowanie…* op. cit., pp. 12-13.
[16] M. Piotrowski, *Procesy…* op. cit., p. 16.

Table 1. Examples of processes performed in Sagitum with the use of IT systems

No.	Process	IT systems			
		Webcon BPS	ERP Optima	OCR	Customer suport system (www)
1.	Cost invoice process	Yes	Yes	Yes	
2.	Help desk service process	Yes			Yes
3.	Sales opportunity registration process	Yes	Yes		
4.	Implementation project registration	Yes	Yes		
5.	Agreement development process	Yes	Yes		

Source: Based on authors' research.

Figures 1, 2, 3, 4 and 5 present diagrams of exemplary business processes in the Sagitum company. The processes were based on BPMN notation. The diagrams presenting business processes include their participants, i.e. the IT systems that operate in Sagitum and take part in the mapped processes.

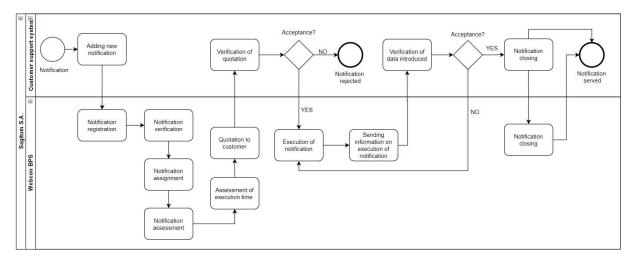The diagrams include such elements as:

- initial event,
- final event(s),
- particular tasks (steps),
- XOR gate,
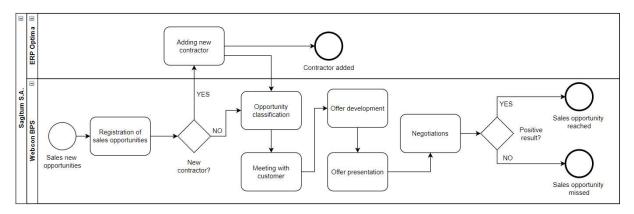- control flows.

Diagram 1. Cost invoice process

Source: Based on authors' research.

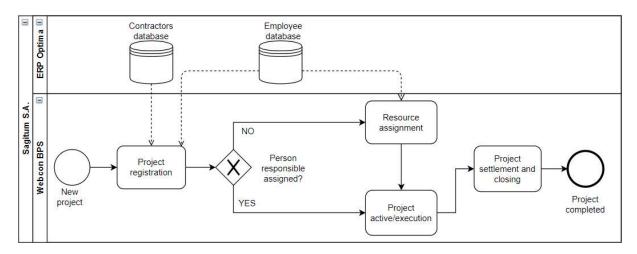**Diagram 2. Help desk service process**

Source: Based on authors' research.

Diagram 3. Sales opportunity registration process

Source: Based on authors' research

Diagram 4. Implementation project registration

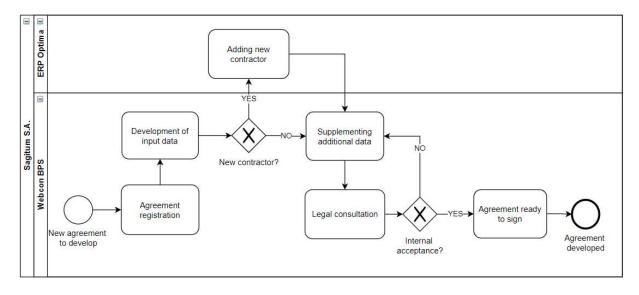Source: Based on authors' research.

Diagram 5. Agreement development process

Source: Based on authors' research.

Webcon BPS is the main system that is involved in all processes presented above. It is applied in cost invoice processing and sales operations. It is one of the systems for the company customer service; it is also used in project management.

All the processes that were described above were implemented and shared to the Sagitum staff with the application of Webcon BPS. The system includes forms for users, flow paths between successive process stages as well as acceptance steps.

Webcon BPS integrates with OCR in cost invoice processing. It also integrates with the Customer support system (www) during help desk service processing.

Another system that is involved in most of the above processes is ERP Optima. It is applied, inter alia, to collect data on contractors and the employees; the system is integrated with Webcon BPS and is the source of data in the presented areas.

Conclusions

Competition on the market forces companies to improve their effectiveness. Thus, every company uses various IT management systems to operate in a more efficient and competitive way. There are many IT systems with different functional classes on the market and when making their choice, companies take into account the profile of their activities.

The purpose of IT systems that are implemented in companies is to accomplish their business processes. Business processes are a network of interrelated activities, procedures and

tasks that are performed either sequentially or parallelly to transform inputs into outputs that are expected by customers. The objective of business processes is to achieve company goals. Company business goals should be managed with the aim to optimize them. In order to improve the efficiency of business processes, they must be defined and modelled.

The analysis conducted in the Sagitum company shows that business processes are accomplished with the use of integrated IT systems. They are basically Webcon BPS and ERP Optima. The company uses the systems in every area of its activities. The systems facilitate the flow of information in the company, help remove data duplication and, consequently, they save employees' time and optimize the operations in the company. The Webcon BPS system makes it possible to optimize the existing processes and to model efficiently the new ones. The systems in Sagitum have a positive impact on the company's results and increase its competitiveness on the IT market and business and technological consulting market.

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[9] Piotrowski M., *Procesy biznesowe w praktyce Projektowanie, testowanie i optymalizacja*, Wydawnictwo Helion, Gliwice 2014.

[10] https://www.autoid.pl/platforma-unis/zarzadzanie-magazynem-unis-wms?gclid=CjwKCAiA9vOABhBfEiwATCi7GP_vWUgg1lY3HHl9r9ujnVyyMQ3_K-42GUt2NYOsThFfuBvjV-jvvBoCl24QAvD_BwE

[11] https://docplayer.pl/11839069-3-1-charakterystyka-systemow-mes.html

[12] https://sykom.pl/erp-mrp-crm-w-gaszczu-systemow-informatycznych/

Abstract

Competition on the market forces companies to improve their effectiveness. Thus, every company uses various IT management systems to operate in a more efficient and competitive way. The purpose of IT systems that are implemented in companies is to accomplish their business processes. Business processes are a network of interrelated activities, procedures and tasks that are performed either sequentially or parallelly to transform inputs into outputs that are expected by customers. The article presents business processes in a present-day company that are accomplished with the use of integrated IT systems. The article also includes an assessment of the use of IT systems in business processes.