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The application of concepts and methods based on process approach to increase business process efficiency

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Abstract

Business process management (BPM) as a systematic managerial approach enables organization's workflow to be more effective, more efficient and more capable to adapt to an ever-changing environment. BPM attempts to improve processes continuously with consideration of customer's needs and requirements. The concept of BPM is not new, however many companies are still struggling with the implementation of BPM and with application of concept and methods based on process approach. The article presents findings of our research on current state of implementation and application of BPM in enterprises operating in Slovak Republic. Our study was focused on several aspects related to BPM such as examination of the reasons why managers decide to implement BPM in their businesses, the level of process mapping, the level of usage of concept and methods of BPM as well as the detection of limitations and barriers of process management implementation and application.

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Keywords: Business Process Management (BPM); Process Approach; Business Process Efficiency; Implementation of BPM

1. Introduction

As natural consequences of the competitiveness growth, of the impact of rising customer requirements and of the increase of the number of companies offering comparable products, companies are constantly trying to streamline the operation of the entire organization and to enhance own productivity. As many practitioners and researches pointed out, business process management in this regard helps to reduce costs, flow time and to improve quality, productivity and efficiency of processes in organization (Repa, 2012; Weske, 2012). By placing business processes

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on center stage, companies can gain the capabilities they need to innovate, reenergize performance and deliver the value current markets demand (Smith, Finglar, 2006). The company investigates all the details concerning the analysis of their process attributes because every detail can mean an opportunity to improve a competitive advantage and performance of the company. The process approach is seen as a key tool for continuous improvement of business processes. The concept of BPM is not new, but still remains as one of the current trends in management and not only in Slovakia. The benefits and advantages of BPM are quite clear for many managers but on the other hand, it is necessary also to mention the barriers and risks of process management implementation that are discouraging managers from BPM implementation. The main challenge remains how to implement process principles into an organization's operation (Skrinjar, Trkman, 2013).

Therefore, the main purpose of our study is to analyze the implementation of process management and the attitudes and support of managers towards successful application of process management and its tools and methods. The aim of our research is to assess how managers approach the implementation of process management, to identify the main barriers and also to assess the usage of process tools and methods to support application of process management.

The paper is organized as follows. After introduction, in the literature review, we discuss the principles, history and various methods and tools of process management. We also point out differences between traditional functional management and process management to understand the principles of BPM. In addition we define the benefits and the barriers in connection with the application of process management and change management. In the next section we describe the main goal, data and methodology of our research. The results of research and analysis are presented and summarized in the section Results. Last section summaries and concludes our main findings.

2. Literature Review

2.1. From functional orientation to processes orientation

The phrase by Peter Drucker "do the right things the right way" perfectly describes the principle of process approach in management. Process management is not another form of automation or a fashionable new management theory (Smith, Finglar, 2006). To gain better understanding, it is useful to start with short explanation of history and of the classical approach to management based on functions. Process approach in management can be better specified through its comparison with classical, traditional approach to management.

For many years, companies focused on efficient execution of individual functions, which has led to a local optimization and perfection of functional areas (Becker, Kahn, 2003). These classical principles in management were created by Taylor and Fayol and they formed the approach called a „functional management". Fayol, as a founder of classical theories in management, named the basic management functions as a planning, organizing, commanding, coordinating and controlling. He also divided activities of the company into business functions such as accounting, finance, production, distribution and others (Robbins, Coutler, 2013). Although in the theory and praxis of management other identification of the basic business functions and activities of company can be found, in general, there is application of the same principle that aim to break down the company into number of specialized functions. The main principles of functional management include the fact that the work is organized according the specialization and creation of functional units, and that correspond with formation of organizational structure and organization design. Although the functional management was extensively used and its traditional wisdom is deeply rooted, it was more effective in past in relatively stable environment. We can find many authors and researches who declared the limits and restriction of functional management and who pointed out the need for fundamental change (e.g. Hammer a Champy, 1993; Becker, Kahn 2003; Trunecek, 2003; Borovsky, 2005; Repa, 2012). However, the idea of a process orientation design is not new. It has been increasing attention since the end of 80´s (Becker, Kahn, 2003). The process principles were firstly outlined by M. Hammer in USA (Hammer, Champy, 1993). Their approach is known as re-engineering and it began to be applied progressively in the U.S. companies from the early 80's of 20th century. Later in the 90's it began to appear in the U.S. under the name of BPM - Business Process Management. Overall historical development of Process Management and comparison between continuous improvement, re-engineering and the third wave of BPM is best expressed in Table 1, in particular with regard to its development in the USA (Lusk et al., 2005; Papulova et al., 2014.) In Slovakia, process management became

popular at the beginning of 21st century. As mentioned, process management has been developing gradually - the first wave with the development of information technologies and quality management. Since 1960, the development of technology started the first wave of process orientation. International (especially Japanese) companies were becoming more competitive, especially due to their concentration on quality and problem-solving areas. U.S. companies began to imitate the approach to quality. The combination of this investigation and technological development has led companies to rethink the management approach and thus the process era began. Companies were also oriented to TQM and ISO standards later on. The increased need to manage data meaningfully caused the development of Statistical Process Control. Increasing use of computers in the seventies and eighties led to the development of quantitative statistical software and the use of techniques of data collection that allowed measurement, collection and interpretation of the results. The second wave of process management encouraged companies to expand their business with process innovation, radical redesign and operational excellence. Finally, the companies focused on continuous change with better adaptability and agility in early 2000. Market growth was the accelerator for process effectiveness and performance measurement. In this time of hyper-competition, organizations witness an accelerating pace of technological change - an acceleration of "clockspeed" in one industry after another (Fine, 1998). There is an infusion of new technology even in traditional industries. Major vehicles for that infusion are the role of software and information technology (IT) in determining product functionality and facilitating logistics. The focus is on meeting customer needs through discovery that enables heightened performance and new features – BPM methods, not increased reliability through control. This is especially the case with getting new technologies to customers as quickly as possible as firms seek to create new markets and carve out market leadership positions with potentially long-term positive consequences (Moore, 2000).

Table 1 Three waves of Process Management

Phase	Period	Focus on	Management of organization	Technology	Tools/ methods
Industrial age Information age	1750–1960	Specialization Productivity performance Cost reduction	Functional Hierarchy Line production Orders/Controls	Mechanization Standardization Data Storage	Scientific management Financial Modeling
The first wave - Process improvement	1970–1980	Quality Management Continuous flow Task efficiency	Diversification of companies Fusions and acquisitions	Automation Information Technology Management	TQM Statistical process control Process Improvement Methods
The second wave – Re-engineering	90´s	Process Innovation Best practices Better, Faster Business over the internet	Flat organizations Value Added for customers operational excellence	Enterprise Architecture ERP CRM Supply Chain Management	ABC Six Sigma Process redesign Methods of Reengineering
The third wave - Process Management	2000 +	Evaluation Adaptability Agility Continuous Change	Network-centric organizations Hyper-competition Market growth Process effectiveness before efficiency	Enterprise Application Integration Architecture oriented on services Performance Management Software BPM Systems	BSC BPM methods Outsourcing

2.2. The principles and core elements of process management

Based on the definitions of domestic and foreign authors (Hammer, Champy, 1993; Lee, Dale 1998; Trunecek, 2004; Borovsky, 2005; Zavadsky 2005; Repa, 2012), we gathered certain definitions and content of process management in several points:

1. Process management is the identification and management of a continuous flow of activities within the organization and between organizations in achieving the chosen strategy of the company. Any meaningful work shall be defined by processes.
2. Process management is built on the pillars defined by main attributes of processes, process owners and responsibilities with complex binding to the attributes with a thorough orientation to the customer.
3. Process management is an approach that brings consistent methodology of process improvement and prevention of errors at all company levels. Labor productivity across the enterprise is derived from the productivity of individual processes. The process involves various activities that are described, measured and evaluated. The basis of improvement is in the elimination of errors, shortening downtime, eliminating redundant costs and activities that do not add value.
4. Process management is a system of resource management linked to business activities that bring an organization to its suppliers and customers. All processes have some inputs from suppliers and outputs leading to specific customers.
5. Process management is a systematic and structured approach to the analysis, improvement, control and governance of processes with the target of product and service quality.
6. Process management is a group of tools and methods to improve the efficiency of business processes, and to manage the implementation process within the rules (legislation, standards, and guidelines) which supports the integration of applications and services in information system of organizations.

Recently, a number of models and core elements concerning holistic understanding of BPM have been identified by many authors (Rosemann, Brocke, 2010). We summarize the six core elements in Table 2 which demonstrate the linkage and relationship between these six core factors and capability areas.

Table 2 Six core elements of BPM

Strategic Alignment	**Governance**	**Methods**	**Information Technology**	**People**	**Culture**
Process Improvement Planning	Process Management Decision Making	Process Design and Modelling	Process Design and Modelling	Process Skills and Expertise	Responsiveness to Process Change
Strategy and Process Capability Linkage	Process Roles and responsibilities	Process Implementation and Execution	Process Implementation and Execution	Process Management Knowledge	Process Values and Beliefs
Enterprise Process Architecture	Process Metrics and Performance Linkage	Process Monitoring and Control	Process Monitoring and Control	Process Education	Process Attitudes and Behaviours
Process Measures	Process related standards	Process Improvement and Innovation	Process Improvement and Innovation	Process Collaboration	Leadership Attention to Process
Process Customers and Stakeholders	Process Management Compliance	Process Program and Project Management	Process Program and Project Management	Process Management Leaders	Process Management Social Networks

The six elements were created to represent key success factors for implementing BPM in practice. Some of the elements are more technical in nature and need deep understanding of “hard” principles and some are business oriented, some look more at the behavioral side of BPM while others focus on methodologies. This model of elements helps to make the holistic view on the implementation of BPM and therefore it is useful to apply the model before implementing any changes to organization.

2.3. Methods and concepts based on process management principles

Another component of process management consists of methods and concepts based on the process approach. Methods and concepts were divided by Zavadsky (2005) into two groups:

1. Methods related to the overall process. The starting point for their application is the need to identify individual activities, and the whole business process. Although the method ultimately can only refer to one attribute of the process, it cannot be used without the knowledge of the overall process, because the application of the method has an effect on the process as a whole.
2. Methods related to the process attribute or activity. This group is larger than the previous one; this includes most used management techniques and approaches. The methods do not require the application process approach because they do not need to know the process as a whole, the method can be applied to selected process attribute or activity.

Implementation of BPM does not only require a basic understanding of the risks and limitations (Skrinjar, Trkman, 2013), but also a deeper understanding of the possibilities of using different tools and approaches (Weske, 2012). Selection of procedural methods should be connected with the organization's requirements and conceptions, but also with the skills and abilities to use the tool. In our research, the application of these instruments was examined and the extent to which managers use software support. Apart from the implementation of process management there are other tools and methods that are related and linked to business process management (Papulova et al., 2014, Aalst, 2013):

- ABC (Activity Based Costing)
- ABM (Activity Based Management)
- BPM (BPI - Business Process Improvement)
- BSC (Balanced Scorecard)
- SCM (Supply Chain Management)
- Quality Management Systems (ISO, EFQM, Six Sigma)
- CRM (Customer Relationship Management)

On today's market in Slovakia we can choose among multiple software tools which can model, analyze and simulate processes. These tools usually use a graphical visualization and process description and real simulations of processes designed. Some instruments are easy to manage, others offer comprehensive solutions. We could divide these into three groups which were also discussed in the survey:

- Mapping Tools (e.g. Process Wizard, MS Visio)
- Modeling Tools (e.g. ARIS Toolset, System Architect)
- Modeling and Simulation Tools (ProVision, QPR Process Guide)

3. Methodology

3.1. Research Goal

Our study highlights the importance of BPM implementation and continuous improvement of business processes and their attributes. The goal of our study is to analyze the implementation of process management and the attitudes and support of managers towards successful application of process management and its tools and methods.

3.2. Data Collection and Analysis

Our survey was conducted from January to June in 2015 by questionnaire and by structured interviews in companies operating in Slovakia. We selected companies from various sectors in order to obtain broader overview of manager's attitudes to BPM. The number of companies in research was 178 and companies were divided into several sectors:

- *Industrial production:* companies in the engineering, food processing, electronics and other industrial sectors: almost 45% of surveyed companies,
- *Services:* companies providing logistics and marketing services, information and communication technologies, financial institutions, consulting, trade and tourism: almost 55% of surveyed companies.

Concerning the size of companies, a significant percentage of companies (app. 36%: small and 32%: medium) were small and medium-sized enterprises, micro and large companies built a small interviewed group.

4. Results

4.1. Level of BPM application

The level of application and implementation of process principles revealed significant findings in the area of benefits, importance and limitations of this application.

The main benefits are seen in the improvement of:

- *satisfaction of external customers* (48%)
- *continuous improvement of business processes* (34%)
- *reduction of overall costs by optimizing processes* (22%)

These benefits dominated in answers of large and medium sized companies. In small companies, the benefit was seen much more in supporting the company's innovativeness and in costs reduction.

The main limitation and barriers of the BPM implementation:

- *lack of qualification for implementing BPM* (47%)
- *resistance to change (no need to implement new systems)* (42%)
- *lack of specialists within the organizations to apply BPM principles* (34%)

Other important limits were identified as not sufficient support from top management (23%), lack of financial resources (19%) and negative attitudes of employees to overcome the change (12%). The summarization of the BPM application level can be seen in the Table 3.

Table 3 The level of BPM application

Level of BPM implementation	Overall	Companies with highest %	Sectors with highest %
No processes determination	15%	Micro and small sized	Services (Trade, Tourism)
Process descriptions (attributes)	28%	Small and medium sized	Industrial Production
Process descriptions, graphical process maps	17%	Medium and large sized	Services (Consulting)
Process measurement and evaluation of processes	19%	Medium and large sized	Services (Telecommunication)
Process management with help of BPM methods	12%	Medium sized	Industrial Production (Engineering, Automotive, Electronics)
BPM implemented, process innovations and strategic goals optimizations	9%	Large sized	Industrial Production (Engineering)

Those companies, that indentified themselves at least at level 2 (process description or process measuring) were asked also to indentify the procedures of describing and mapping these processes. The most common response (62%) was showing that the description and depiction of processes are done with help of own systems and standards – MS Word, MS Excel, Pohoda nadstandard and others. In the second most common answers, companies (app.35%)

reported capturing processes by describing them in the quality management systems (ISO standards). Very few companies (2 - 5%) are on the other hand using specialized methods to map and model processes, such as IDEF (Integrated Definition) - IDEF1X, IDEF14, IDEF12, BPMN (Business Process Modeling Notation) and EPC (Event-driven Process Chains). To conclude we can say that the companies mostly developed and used own systems and standards rather than standard or on the market available methods. The most frequently indicated software tools were ARIS, ARIS Business Architect, QPR, Compass, Process Wizard, Nimbus, Arriba, SAP Wave and others.

4.2. Use of methods based on process approach

Up to 55% of companies stated that they do not implement methods of BPM yet. Companies usually are using these methods BPI (21%), ABC (17%), BSC (15%), and SCM (15%). The other methods with fewer applications are Six Sigma, Lean manufacturing and CPM. Again, as shown in the previous question, large companies had highest percentage in the use of BPM methods. Financial institutions and trade enterprises apply methods like ABC, BSC and BPI methods at the most. IT and other industries dominated with application of methods like SCM, CPM, Lean Manufacturing and Six Sigma. The comparison of methods used by companies is showed in Table 4, as well as the sectors most represented.

Table 4 Use of methods based on process approach

Process approach methods	**Overall**	**Sectors dominated**
ABC	17%	Trade, industry, finance
BSC	15%	Trade, consulting sector
BPI	21%	Trade, finance, consulting sector
SCM	15%	IT, trade sector
CPM	9%	IT, trade sector
Lean Manufacturing	13%	IT, industry sector
Six Sigma	12%	IT, industry sector

4.3. Process performance measurement in companies

One of the most important, but frequently most challenging aspects of implementing business process management in an organization is metrics. The necessity of having metrics at the process level to enable process owners and performing teams to monitor performance, diagnose variation, and make effective course corrections is indisputable. Once a business process has been created or redesigned, measurement of process performance is critical. Ongoing measurement is the basis for continuous improvement.

In this research area we focused our attention on the attitudes of managers on process performance measurement. We studied how they measure and evaluate the process performance and to which extent they support the process performance. The results are presented in Table 5.

Table 5 Attitudes on process performance measurement

Statement:	**I agree**	**I partially agree**	**I do not agree**	**No answer**
Each process has an indicator for measurement and evaluation	33%	**46%**	15%	6%
We have a given periodicity of recording the values of indicators	19%	**34%**	31%	16%

We have IT support for measurement and evaluation of process performance	11%	27%	**48%**	14%
We determined corrective actions in case of exceeding the indicators value	11%	29%	**46%**	14%
We have the data about the costs of processes	24%	31%	**33%**	12%
The process performance measurement serves as the basis for process improvement	22%	**42%**	32%	4%

Almost 46% managers stated that they set the metrics and indicators to evaluate them. There is only little difference in attitudes of managers with the periodicity of recording the values from the evaluation. The statements about IT support for measurement and evaluation of data and taking corrective actions were answered negatively. About 42% of managers partially agreed with the measurement of process efficiency which provides a rational basis for selecting what business process improvements to make first.

5. Conclusion

Nowadays all companies require business effectiveness and efficiency while striving for innovation, flexibility, and integration with technology. In comparison to traditional management approach oriented on business functions, process management is oriented on processes and on processes with added value. The important task of implementation of BPM is to understand the benefits that this approach brings if applied properly. On the other hand it is also important to understand the problems and the limits companies are still dealing when considering BPM implementation and application. In the article we discussed our findings on current state of BPM implementation in Slovakia. Business Process Management and its application is still reaching a considerable attention in Slovak companies, not only from the business oriented perspective, but also from the perspective of information technologies. Our survey was focused on both perspectives, on the core of the BPM implementation and on six core elements of BPM. We also studied why managers are still not prepared for a change (from functional to process approach).There are still many reasons and limits in the companies like negative attitude to change in various forms, unwillingness to hand over competencies or lack of management support. The survey showed managers' awareness of major importance in the BPM application, to maximize the benefits for the customer, as well as minimize unnecessary, redundant processes and costs.

To sum up we can resume the knowledge about the attitudes of managers of Slovak companies in several areas:

- The application of the process approach is perceived negatively, so managers have to contend with finding support and overcoming resistance to change.
- Lack of specialists and skills in process management highlights the need for training and development of employees and managers in this area and the need to use the services of consultancy companies.
- Corporate culture also plays an important role in applying process management. The components of the corporate culture are actively involved in the attitudes towards change, which figures as a key factor in the effective management of change management.
- The process performance measurement is still perceived as an optional method for process improvement and not the basis.

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