Knowledge Services in Business Process Management: A New Way for Increasing of Productivity?

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Abstract: - This paper represent the appropriate software support for Process Management, and those tools which are used in a whole range of Czech and world-class manufacturing production and non-manufacturing enterprises as well as in organizations and other public sector administration institutions. The innovation in the tuition process lies in the fact that this software is not used for modelling the processes within the university (the organization itself) – but rather, that the students themselves model and analyze processes drawn from real-world praxis (working practices) in manufacturing production and non-manufacturing enterprises.

Key-Words: - ARIS (Architecture of Integrated Information Systems), Business Process Management, Education, FTE, Knowledge, Management.

1 Introduction

Process management is an approach that today is becoming more popular and gets increasingly implemented in more and more companies. Process management can be understood from two perspectives. One is the process management as a managerial discipline. The second aspect understands the process management as a technology that supports process-oriented management. Process approach allows organizations to eliminate the biggest disadvantage of the traditional functional approach that cannot be considered as an approach appropriately flexible for changes in the corporate environment, variety of procedures, or excessive substitution of workers. Processes are always understood in relation to the customer. Only if the management processes are effective, then the companies can effectively manage, modify, improve efficiency, improve performance, identify and resist market risks [2, 16,22,24].

The market forces of today's business process (BP) development have begun to place an important emphasis on business process quality. Evidently, the quality of a business process model (BPM) highly influences the deployed business process. This motivated several researchers to propose metrics to evaluate the quality of BPM.

In fact, the concept of quality metrics was initially introduced to examine software quality. According to [3], a quality metric is a quantitative scale and a method that can be used to determine the value taken by a characteristic of a software product. Exploiting the maturity of software quality metrics, several researchers adapted several metrics from the field of software engineering for business process models [6,9].

Moreover an electronic business environment changes more rapidly under the globalization, even small and medium size companies also change their business. With enterprises becoming bigger and bigger, the legacy business systems may not be flexible enough to adapt this change and the discordance between business and information systems in their organization may occur [1,14].

Second, it must be remembered that in the digital era, information fluency has become one of the most important capabilities for students [31]. Information fluency implied that students should be able to apply existing knowledge to generate new ideas, develop innovative products, or make use of technology as cognitive or productivity tools. From perspective of social constructivism, the function of individual differences on skills, aptitudes and learning preferences could have impact for the application of technology in classroom settings. Learners' learning styles affect the preferences of information process and prior knowledge affect the propositional network of the long-term memory. Previous studies have confirmed that matching types of instruction with learners' stronger learning styles could enhance learners' information and communication technology (ICT) skills and motivation [4,15,30].

The people who have the knowledge of contribution, have the more accessible right to management and have the responsibility for implementing the decision taken, they will then be the more accurate participants in decision-making. So the participation of lecturers in decision making, to some extent will be important in achieving the institutional aids [13].

The second point is, 'different perspective': Individuals with varied experience and interests help the group see decision situations and problems from different angles. This may help to reveal the probable disadvantages/demerits of the decision and also to find out how the decision will work out [8,20].

2 Literature Review

First of all, in this article we should evaluate the reasons which lead enterprises to exploit elements of process management in their working practices. The aim of Process Management is to develop and to optimise the daily running of an enterprise in a way which defines these work-related procedures (i.e. processes) as a unified flow or cascade of activities throughout the enterprise, where for each and every process its inputs are clearly defined as are the outputs or results, and where the associated responsibilities and personal responsibilities are assigned for each and every process or activity, while establishing a system for the measurement of the performance of these processes and tracking and evaluating each and every process [12,23].

These activities must be realised (i.e. implemented) such that:

- The quality of production will be maintained through given measurement parameters.
- All available resources shall be optimally exploited.
- All of the performance indices of the enterprise have been improved continuously throughout in line with previously agreed and known and measurable criteria [29].

This however means that there is a need to describe just what distinguishes or characterises a process, which is a so-called "management process". This means that such a process has:

- A defined, ranked set of steps to be taken and appropriate responsibilities allocated.
- A set of measurable parameters derived from customer demands or requirements, or internal standards – "owners" of the process/es.
- A permanent process team who meet regularly with the aim of seeking improvements to the process/es.
- An annual plan which contains the requisite outputs/outcomes/results for each and every key process, as well as appropriate budgets and demands on resources.
- A mechanism for the regular and interim controls of the process/es performance.
- Procedures and resources (i.e. the process team) for the resolution of problems associated with the process/es [29].

A Short History of Business Process Management

We should begin with the principles. Managers are often confronted, even in renowned magazines, with several similar terms and concepts which may be confusing or at least their correct content and principles may be misinterpreted on the basis of inaccurate information. What do the terms Business Process Management (BPM) and Business Process Reengineering (BPR) mean? What is their application in practice? In this subheading we would like to acquaint you briefly but precisely with these terms and their content.

From the point-of-view of management and Business Process Management development, authors such as King, Fingar, Smith etc. have offered various conceptions in order to comprehend the connections and differences between them. King, for instance, has distinguished between four development waves BPM [22].

He has mentioned the following in his publications:

- the first wave of BPM – was concentrated on constant improving of the processes and coincides in many ways with the philosophy of TQM (Total Quality Management), a philosophy which leads to an increase in productivity, a simultaneous increase in quality and increased customer satisfaction while decreasing losses caused by poor quality production. TQM is thus a systematic and consistent application of several methods within the company organization clearly concentrated on quality and customer satisfaction.
- the second wave of BPM - consisted of a focus on Business Process Reengineering, or in short Reengineering. This is regarded as the second wave involving the trend of management leading towards essential, radical and fundamental changes in the organization of applied work procedures or

technologies. The achievement of not merely incremental but has a radical rise in organization productivity as the expected result.

- the third wave of BPM – the authors [5] refer to activities leading to the creation of a process focused organization. This involves the application of main component procedures or process management consisting of the following:
  - key process determination including the appointing of process possessors and customers;
  - within the process description, their mapping and process map formation (a company process model) for recording process system management;
  - the application of process maps (models) for cost intensity evaluation and increases in their efficiency;
  - continual process improvement and measuring of efficiency;
  - quality in the enterprise is mainly understood as the demand for quality standards which lead off the process model;
  - information technologies considered as the process support in the enterprise;
  - while the process model creates the basis of the process management, the strategy management is comprehended as the peak of the "pyramid" of process management;
  - competence management is comprehended as the system enabling fulfillment of roles in individual processes (both management and key processes) by those people who have appropriate knowledge and abilities for them.
  - Consequently mentions as crucial [12]:
    - the process model;
    - constantly improved processes – procedures for optimization and improvement of the processes;
    - strategy management;
    - competence management;
    - quality management.
- the fourth wave of BPM – is a group of activities leading towards the achievement of competitiveness based mainly and exclusively on the processes.

It is essential to additionally adduce other authors for a better understanding of the differences and links between BPM and BPR; e.g. [18,19] when applying this managerial trend they recommend implementing process management in the organization first and consequently focusing on reengineering processes on the basis of the specific priorities of the organization.

According to an entire range of authors [10], the consistent realization of several steps is recommended for an increase in the process productivity of the company. These three authors agree on this fact in large measure. This procedure can be defined as following:

- endorsement of fundamental rules within the process management application;
- formulation of the sense of such a project;
- identification and endorsement of crucial factors of prosperity;
- identification and endorsement of individual types of company processes;
- simulation of individual types of company processes (according to crucial prosperity factors) with the application of process teams – creation of a process map;
- determination of process priorities;
- measuring of process efficiency;
- optimization of company processes;
- additionally, the projects of the reengineering processes often follow in accordance with an individual scenario [5].

The idea of a service-based architecture comes from the eighties. However, this practice did not come into widespread use until relatively recently. Nowadays, the most common use of Service-Oriented Architectures (SOA) [11] is at a functional level, where it is required to integrate the internal applications of the company. The main problem was connecting and communicating the different units and departments in an easy and scalable way. By means of a SOA, this communication can be solved more easily because its functions are published as services, and they are consumed independently by other departments which utility the same or other systems. The second use of SOA was derived from the results of the previous advantage, migrating the idea to a superior level, to the business processes instead of functional units. Therefore, Business Process Management (BPM) was developed along with execution languages such as BPEL (Business

Process Execution Language), station languages (BPMN) and monitoring tools (BPA).

As a result, a business process can be defined in a specific language and each activity within this process can be connected to the functional unit it depends on [17].

3 Methodology of Process-Modelling Tuition

The aim of Process Modelling is the creation of a process model of the organisation. The design of such a process model is highly-demanding on time, and it is only with great difficulty and with many restrictions that it can be mastered without the appropriate software.

A core component of the whole system for the documentation of processes is the mutual interlink age of all of an organisation's document flows, which are broken down into three basic levels:

The *Organizational* – these define the organisation's structures and their aims.

The *Processional* – these define the approaches and procedures that lead to the attainment of the organisation's aims and goals.

The *Performance* – the level at which activities are carried out by the appropriate responsible employees.

How is such a process model created?

The whole problem and associated issues regarding the creation of a process model is covered in detail within the framework of the tuition of subject Computer Support of Business Processes at Faculty of Management and Economics, TBU in Zlin.

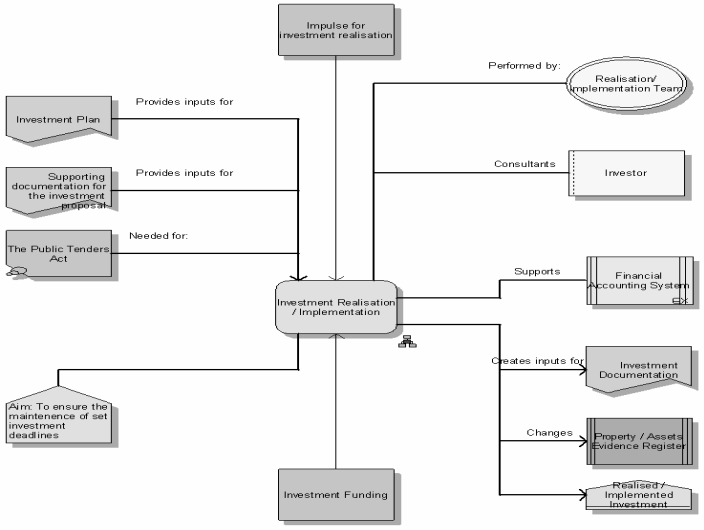
Processes can be broken down into categories according to the value-added they provide to external customers as follows:

- *Management processes* – These determine and ensure the development and management of an enterprise's performance. They create the conditions for the correct functioning of other processes in that they ensure the management and integrity of an enterprise. Among these are, for instance, strategic planning, quality management, etc. [28].
- *Key/Core processes* – These create value in the form of products or services for external customers. Value-added chains are created, representing key/core areas of the enterprise's business activities. For instance, production, sales, distribution, etc.
- *Support/Ancillary processes* – These ensure the conditions governing the correct functioning of all of the other processes in that they give/deliver them the products (tangible or intangible) – but which at the same time, are not part of the main or core processes. By these, we have in mind for instance economic (financial) management, human resource management, IT services and support, ecology, plant and equipment repairs and maintenance, etc. [5,30]

The aim here is to describe a process at its highest level, i.e. its main inputs and outputs and most important relationships. We describe the summarising characteristics of the process from both the customer and the performer of the process` point-of-view. Depending upon the purposes of the process analysis, we track various characteristics of the process. For instance, in the case of an analysis intended for information strategies, emphasis will be placed predominantly upon working with information. The identification of the attributes of the process serves to define and delimit the borders of the process and the instructions for its detailed analysis.

The first description of the context of the process is not a final description, but rather the primary summarisation of information about the process prior to its even more detailed analysis. At this stage therefore, its internal structure is not described, nor are the actual processes that take place within that process. An example of such a model is set out in Fig. 1. The aim of this sample model is to show the ordering and ranking of the functions, and to provide an overview or perspective on the context of the process [19].

Fig.1. Description of the context of a process (ARIS Business Designer)



What study disciplines are Process Management taught in?

In the 2010/2011 academic year, Process Management is being taught in the following disciplines:

The Master's Degree Program: Economics and Management, for full-time students, in the following Specialisations:

- Enterprise Economics;
- Industrial Engineering.

In the 2010/2011 academic year, Process Management will be included in all of the specialisation of the Combined (Distance/Lifelong) Studies programme.

In the 2011/2012 academic year, Process Management will be taught in all full-time specializations [26].

In the first year of the Master's Degree Program:

- In the winter semester, the subject: Reengineering – The Theory and Basics of Process Management is taught.
- In parallel with this, the subject: Computer Support of Business Processes (now called "The Theory of Industrial Business Systems II) is also taught; within the context of which students learn to work with ARIS Business Designer.

Benefits of Using the ARIS Software Tool

Tuition based on the use of the ARIS and Microsoft Navision enterprise applications in the Production Systems subject links onto the tuition of these applications in the preceding (parallel) subjects – except for the fact that it concentrates on the clarification of the management of commercial and economic (financial) processes. In so doing, it helps to make more attractive the position or standing of the Master's Degree study programme, or even of FAME Zlin in competition with other economics-oriented faculties (not only in the Czech Rep.).

It increases the attractiveness of the disciplines of Industrial Engineering and Enterprise Economics in that the freshly innovated content of these subjects contributes to a significant degree to the offer of a complex educational programme oriented on the exploitation of ICT in the management of production, logistics, commercial (sales), and economic (financial) processes.

These interlink age with other subjects within the framework of the study disciplines of Enterprise Economics and Industrial Engineering allows economics/managerial students to acquire a multi-professional knowledge in relation to the use of ICT [21].

On the other hand we have to state, that Organizational change using IT can begin with an analysis of existing organizational elements and an identification of ways to change the dependencies among them, especially between processes. Therefore, IT is one of the fundamental elements of Business Process Change (BPC) [7]. Its role is significant throughout the entire duration of process change: before the process is designed (IT as an enabler), while the process is being designed (IT as a facilitator) and after the design is complete (IT as an implementer). Therefore, building a responsive IT infrastructure is the key factor for successful implementation of BPC.

There is considerable anecdotal evidence that even small changes in the use of IT in an organization may require major restructuring of the organization to take full advantage of the efficiencies created by the technology. Conversely, there is also significant evidence that without major restructuring, the introduction of IT may not produce savings needed to justify the investment. Although the evidence for organizational restructuring to accompany technological change is strong, there is much less agreement on exactly what organizational changes are needed to take full advantage of the technology [7].

The significance of tuition using the ARIS modules

The main aim is to improve the quality of tuition of Process Management at the FAME Zlin. Tuition will be concentrated on the area of exploiting these software applications on the basis of model situations based on the everyday practices of enterprises (a case-study approach). It allows students to also acquire practical knowledge and skills, which they will later be able to apply in their future careers.

It ensures close cooperation with entrepreneurial practices, which should allow – among other things, the presentation of model situations drawn from the working practices of manufacturing production companies. It makes connections within the framework of the tuition of individual specialisations between the various types of knowledge that students have acquired (will acquire) within the framework of other subjects: i.e. Apart from the subject of Reengineering [26].

- In the subject of Production Systems – in the course of the tuition of discrete simulations using the Witness application.

- In the subject of Enterprise Information Systems using the ERP Microsoft Navision applications for the economics (financial), commercial (sales), and CRM fields.
- Or in the subject of Information Management using the Oracle E-business Suite 11 application for the management of production and logistics processes, which will - at FAME Zlin – Department of Production Management – Industrial Engineering, be realised in the form of a leasing arrangement – the ASP model and taught as an alternative to the Navision or SSA Supply Chain Solutions applications.
- (The last two subjects named above are taught in the summer semester of the 1st Year of the Master's Degree studies programme).

This way of teaching enables:

- Increases in the competitive ability of FAME Zlin graduates on the labour market.
- Making FAME Zlin more attractive and especially making its Master's Degree studies programme more competitive with regard to other economics-oriented faculties.
- Support of the building of hybrid careers as economists/managers in relation to the exploitation of ICT.
- Increasing the attractiveness of the disciplines of Industrial Engineering and Enterprise Economics by the offering of a complex educational programme oriented on the exploitation of ICT in the management of production, logistics, commercial (sales), and economics (financial) processes.
- The long-term further development of cooperative ventures between FAME Zlin and ICT providers, their customers, and this on the basis of extremely close ties between them and the educational process.

Previous approaches to teaching

Tuition using ARIS is realised through: (i.e. the client/server architecture)

- A Dell PowerEdge SC2950 server;
- 24 client PCs.
- A Microsoft SQL Server 2008;
- A 100 Mbit LAN.

The approach to tuition using the ARIS Business Administration within the framework of the subject "Computer Support of Business Systems is equivalent to the needs placed on the participants of the training programme provided by the IDS Scheer Company. We cooperate with IDS Scheer CR by preparing our lessons.

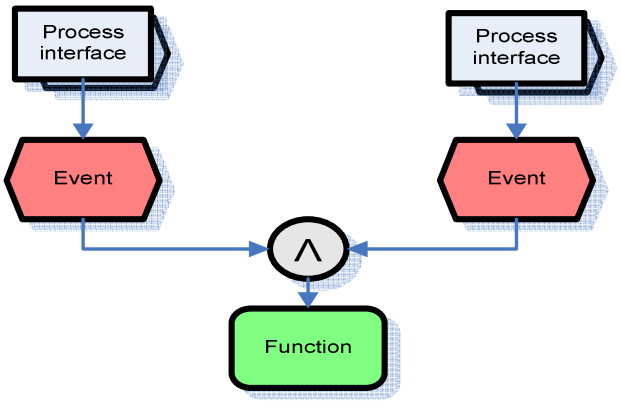
Among all of the above-mentioned subjects, a logical interlink age has been created which means:

- That the subject of Reengineering is linked in the field of process modelling of the use of the ARIS system through practical applications to Process Management and in the course of the complex definition and design of enterprises` processes within the context of the whole company, including analyses and optimization.
- That the subject of Production Systems complements and fills out students1 experience with knowledge of the discrete simulation of production processes.
- That the subject of Enterprise Information Systems is linked through the use of the ERP Microsoft Navision in the fields of economics (finances), commerce (sales) and CRM. Enterprise Resource Planning (ERP) implementation has become more popular and suitable for every business organization; it has become an essential factor for the success of a business. Data Mining is overwhelming the integration in this model by giving support for applying best algorithm to make the successful result. This model has three major parts, outer view-CRM, inner view-ERP and knowledge discovery view. The CRM collect the customer's queries, EPR analyze and integrate the data and the knowledge discovery gave predictions and advises for the betterment of an organization [1].

4 Current Case Study

Currently finishing a project in the Barum Continental Ltd., company which mainly involved students. For the purpose of our project, we have used two of the number of diagrams that the tool ARIS offer. This is a Value Added Chain Diagram (diagram of production of added value - MTPH) and a diagram of detailed description of the process eEPC, one of them is illustrated in the following figure.

Fig.2. Diagram of detailed description of the process (eEPC)



The analysis was carried out at one of the department of energetic, which role is to ensure the operation of manufacturing and office building of the company. The project was aimed to:

- Mapping and analyzing the processes in selected area;
- Suggestions for Improvement: process optimization, organizational changes and rationalization of activities.

Solution methodology

Analysis was conducted by following these steps:

- Identification of the main processes
  - Draw up the aspect of processes level (MTPH).
- Analysis of running of processes, sub-processes and activities with the shift differentiation (if necessary).
  - Draw up detailed process maps (eEPC)
- Collecting metrics (duration of activities, frequency of activities)
  - Analysis of the data (FTE, pie charts).
- Analysis of value-added in processes
- Improvement suggestions and recommendation

We had to gather all the information about the processes up to the level of activities and events, in order to create the required process maps. We were particularly interested in the inputs and outputs of processes, their performers and IS systems that are used in the department. For subsequent quantification of the results, we had to obtain the information about the time demand factor of all the processes. The analysis was conducted directly on workplace through interviews with workers. The general structure of the questionnaire is outlined in the following table (see Table 1). The validity of necessary information obtained through the questionnaire was connected with risk of the workers' subjective responses. We eliminated this risk with cross talks, where information from one employee was verified by another one. Necessity of verification of information was also due to the fact that the detailed process maps were drawn into greater detail than the operating records, we had been given, and also the fact that the records had been poorly and insufficiently elaborated played its role.

Tab. 1 Framework questionnaire

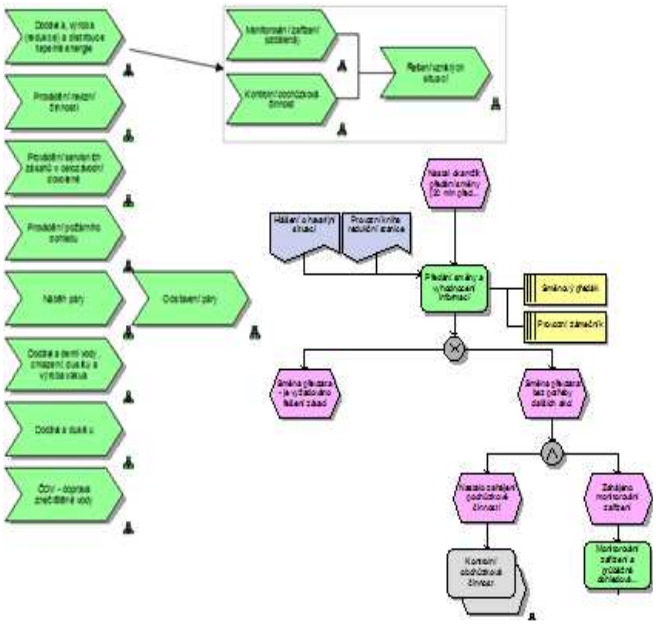
Focus of questions	**Proposal of question**	**Purpose of question**
the aspect of processes level	What group of activities do you do? How does a usual work shift look? What does it precede and what comes next?	Identification of the main processes and their interface
Level of detailed process	What are the steps of the process? What does happen if ...? What does not happen if ...? What scenario does process have? What are the inputs you need? Which outputs occur? Who needs these outputs? What do you need to decide? Who performs each activity? Who is responsible for the output? Who participates in the exercise? Who decides in case of problems?	Define all the entities of each activity, the role of workers, sequence of activities
Collecting metrics (duration and frequency of activities)	How often does this event occur? Per shift? A week? A month? Per year? How long does it take? How long does the repair of this equipment take? How many workers are involved in it?	Get information to quantify the volume of work in FTE (man-years)

Source: authors' research

Results of the analysis of selected maintenance processes

We can develop both types of desired outputs - map with the main processes and detailed process maps - on the basis of all the necessary information obtained through questionnaire. These maps (Fig. 3) show the running of all processes in the department and they also serve as a visual aid for verification of correct understanding of information obtained by questioning.

Fig. 3. Sample of process maps



Source: own processing

To quantify the results of the analysis we used an indicator of FTE (Full Time Equivalent) (1), (2) - equivalent of working time, expressed as the coefficient, when 1 FTE expresses 1 employee during the reporting period. E.g. 0.5 FTE means an allocating 50% of the worker's time in the process per year (if the period is 1 year) [25]. FTE in the aggregate data indicates how many workers are needed to perform each activity. Using collected data of the duration of each activity in hours and frequency of their occurrence per year, we have quantified the duration of all activities for the year. This figure was subsequently used to quantify the FTE for each activity according to the following formulas.

$$1\ \text{FTE} = \frac{\text{worked hours per year}}{\text{number of employees}} \quad (1)$$

$$\text{FTE} = \frac{\text{duration of activities[hours/year]}}{1\ \text{FTE}} \quad (2)$$

The following table shows the calculations on the indicator FTE. The total number of analyzed workers was 17, as can be seen in the overall result in the table. Partial results show how many workers are needed per year for the performance of monitoring, the problem-solving of random situations, fire control, etc.

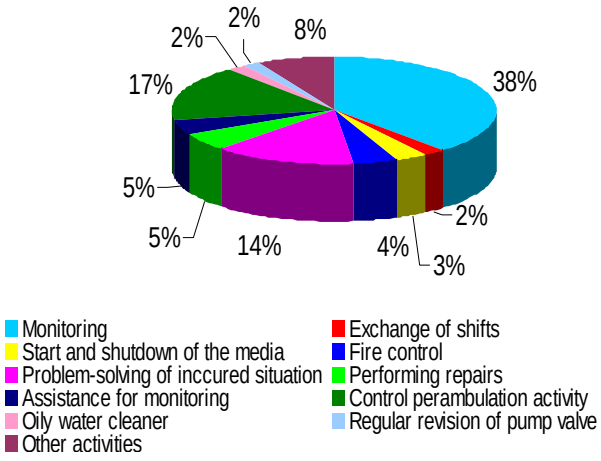
Tab. 2. The calculation of FTE

Department X	**FTE**
Monitoring	6.49
Exchange of shifts	0.38
Start and shutdown of the media	0.52
Fire control	0.72
Problem-solving of incurred situation	2.44
Performing repairs	0.85
Assistance for monitoring	0.78
Control perambulation activity	2.87
Department X	FTE
Oily water cleaner	0.26
Regular revision of pump valve	0.29
Other activities	1.32
Total	**16.91**

Source: authors' analysis

The following graph shows the percentage results (Fig. 4). As can be seen from the chart and tables, the most time-consuming activities are monitoring activities, the random problems solving and fire control. The number of workers needed for their performance reaches almost 12. Figures shown in this article were adjusted in comparison to actually observed values for the reason of data protection of company Barum.

Fig. 4. Graph of volumes of activity



Source: authors' analysis

Mapping of all processes, drawing up the process maps and quantifying the results by using the FTE was performed in order to analyze activities adding or not adding value, which is illustrated in the table and the graph. By means of this analysis, it has been found that almost 70% of all activities at this department do not add any value. Results are influenced by the philosophy of department - detect and repair failures as soon as possible. The main purpose is to avoid the shutdown of production, because it would cause big losses for the company. For this reason, employees walk up and down the factory several times a day and check the equipment whether everything is ok [27].

In terms of process management, each one of described analyses revealed several problematic issues, which are briefly summarized below:

No conceptual approach:
- Absence of concept of development and rehabilitation of equipment;
- Maintenance and monitoring without the categorization and prioritization of equipment.

One of the greatest problems is the conceptual approach at the department. Emergency strategy, which focuses mainly on the removal of failures, cannot be described as preventive maintenance, as workers call the current strategy. The relevant department is responsible for a large number of equipment of various age and weariness. However, staff controls them all by the same frequency without distinction. Inspection and maintenance is not performed on the basis of categorization, respectively prioritization based on the weariness and failure of equipment. This is due to the lack of targeted diagnostic of equipment and low quality level of operating records. Existing records are not used for subsequent evaluation of failure, to predict other failure and they are often reported retrospectively. The maintenance system is not based on planning, but on practices of workers that work at the department for many years. From the listed deficiencies is obvious why the current perambulation activity does not add value.

No systematic procedure:
- Performance of control perambulation activities;
- Performance of redundant activities.

Routes of control perambulation activities are the same for 30 years, while the number of checkpoints increased with growth of Routes are not described anywhere, because staff know what to check. There is no written standard, which could guide new employees. The absence of any standards results in redundant performing of certain activities. These include physical readings of data from some equipment. These data are compared with the same data obtained by using the sensors placed directly on the equipment and then sent to a monitoring center at the information panel.

Human Resource Management:
- There is no documentation for training of workers.

There is another problematic issue related to all of the deficiencies already mentioned (the absence of training materials, standards for evaluating crisis situations, defined control route and the low quality of materials), it is the complexity of managing human resources, and especially too long a period of training and adaptation of new workers (up to 9 months). The problem is the fact that the training of new employees is based only on oral exchange of information. This information are largely connected and related to personality and subjectivity of trainers of workers. There's a high risk of their unwillingness to provide a worker with these information, because knowledge is captured only in their minds, giving them a huge competitive advantage.

Maintenance management is based solely on experience and knowledge of people:
- There is no common standard.

The poor quality of records, the absence of training materials and standards lead to the point when each evaluation and solving of nonstandard situations and, therefore also the way the department is managed, are based on experience and knowledge of workers. The employees don't work with facts that would be equal for everyone. This allows an occurrence of the different evaluation of situations and the possibility of incorrect decisions depending on the skills of the worker.

Software support:
- No concept of development management system;
- A low rate of its utilization.

Department uses two different systems for its own running. The problem is their low utilization, inefficient investment in their development in the past and unnecessary duplication of some of their functions.

Suggestions for Improvement

Problems that have been discovered by using described analysis can be removed by changing work organization and implementation of new elements, which should also be accompanied by a change of philosophy of the department. Recommendations that were presented to the company's management are briefly described in the following text:

- To establish clear (and complex) responsibility for the equipment;
- To transform the company to conceptual (system) process management;
    - To establish and sustain the concept of development and rehabilitation of equipment;
    - To change the concept of planned maintenance, predictive maintenance;

  - To introduce a systematic equipment diagnostics for purposes of prediction;
- To transform to the systematic performing of activities;
  - To define and implement a monitoring plan (of a route);
  - To define and implement procedures for monitoring and servicing;
- Revise the organizational management;
  - A model of competencies (knowledge x responsibility x skills);
  - Organizational structure;
  - To adjust staffing;
- Human Resource Management;
  - To follow the philosophy of universality of workers;
  - To reduce the risk of indispensability;
  - To manage the level of cohesion of the work(s) group(s).

The implementation of these proposed measures would increase process efficiency, particularly through increased utilization of existing staff. Through the conceptual management of inspections, the shift from local to predictive maintenance, the reduction of dependence on workers and of redundant activities would improve the quality of all processes.

One of the constraints of the project surely was the fact that it does not work with data on process costs and running of the project was influenced by emotions that emerged from previous analysis/activities in this department.

5 Conclusion

A great number of companies pass through the modernization process of business activities and implementation of modern elements leading to a gradual increasing of management processes effectiveness. In my opinion, the greatest problem that we have come across, is the need for a change in the traditional concept of functional thinking and overcome the primary doubts and skepticism related to process management and its software support. Whatever change the company is passing through, is also related to fear of job loss for workers. That's why it is necessary to assure the employees that the reason for changes is not due to any shortages in human sources.

During the analyses that were built on interviews with staff, it was shown that the employees are aware of the fact that the current system of their work has certain deficiencies. It could be considered as a sign of willingness to change their thinking. The greatest benefit for the company is the fact that the proposed changes did not entail too high investment in technology or know-how, because it consists only in changing the organization of work. However, the fact that the financial benefits resulting from the changes will come later might be a negative aspect for a company.

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