Modeling of Business Processes and Functions of an Industrial Unit for ERP System Application

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Abstract
A significant advancement and development (horizontal and vertical) of Business Process Reengineering (BPR) has been observed during the recent years, due to the many benefits and the improvement and applicability of business operations, in general, resulting from BPR application, as well as from the availability and convergence of information technologies and operational research. The present study deals with the methodological framework of advanced techniques for the analysis and modeling of business (management and production) processes as well as the results-conclusions of their study-application in a large industrial unit. The two most important approaches for operations analysis are applied: function-based and process-based. The above models are deployed for the first case using the Integration Definition for Function Modeling (IDEF0) technique, while for the second case, using the classical analytical flowcharts. The optimum exploitation of the results, the maximization of the benefits and the achievement of the farthest goals leads to the development/ implementation (or adaptation) and installation of an ERP system.

Keywords: Process and function modeling, Informatics economy, ERP systems.

1. Introduction
The present work deals with the collection, recording, study, and modeling of the business processes and functions of the Athens branch of the company "Thrace Paper mills, SA". The work constitutes a common communication code between management and employees of the company and contributes to the general, as well as, to the in-depth examination of the activities performed within the operational framework of the company. This is achieved with the systematic organization of the information, which are used for the formation of adequate models for activities presentation. There exist two kinds of such models, the type of which depends from the perspective of activities study:

1. Activities Analysis Model based on Functions, which relies on the organizational structure of the company in the distinct Functional Departments that compose the company, and represents all the works performed within them, and
2. Activities Analysis Model based on Processes, which relies on the flow of the
various processes that are fulfilled inter-departmentally within the operational framework of the company, that is, independently of the borders that the organizational/hierarchical department structure may impose.

The above models are deployed using appropriate modeling techniques which are, for the first case, the Integration Definition for Function Modeling (IDEF0) Technique, and, for the second case, the Analytical Flowcharts based on the temporal succession of the respective tasks. The rules of use for these techniques are described analytically, while their understanding from the employees of the company, is a relatively easy task.

The present study, also deals with the observed tendency of modern companies to move towards the direction of application of management systems, which handle processes, and explain the conditions and prerequisites for this particular shift of managerial interest. This work is structured as follows: in Section 2, the theoretical background is presented, the need for modeling is explained and the different implementation methods are enumerated, the concepts of functions and processes are introduced and their differences, advantages and disadvantages are described.

Then, in Section 3, the results from the modeling based on functions and based on processes are presented. Finally, in Section 4, the potential improvements are indicated and the conclusions of the study are highlighted.

2. Theoretical Background

2.1 Processes and Functions

The goals of every modern company include, among others, continuous evolution, achievement of a competitive position in its area of operation, provision of direct satisfaction to its customers and broadening of its clientele, as well as, satisfaction of its employees. A fundamental prerequisite for the achievement of such goals is for the company to have full control of its activities, so as to execute at any instant the necessary improvements. This is not always an easy task and requires constant monitoring from the management, which must always quest for ways to continuously improve the company in all aspects. Based on this concept, numerous studies have been presented during the recent years, which have resulted to the generation of various tested models for the application in practice and implementation of this concept. These models fall within the knowledge areas of Organizational Transformation (OT) and Business Process Reengineering (BPR), that is, of two methodologies that deal with the continuous re-examination, evaluation and determination of the structures, flowchart elements, technologies, management systems and basic company skills, as well as with their resulting improvement and redesign, so as to achieve competitive performance.

This approach encourages and requires the deletion of old and inefficient pro-