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## **CONTRIBUIÇÕES DO PMBOK PARA O GERENCIAMENTO DE PROJETO DE UMA IMPLEMENTAÇÃO DO SISTEMA ERP**

## **CONTRIBUTIONS OF THE PMBOK TO THE PROJECT MANAGEMENT OF AN ERP SYSTEM IMPLEMENTATION**

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## CONTRIBUIÇÕES DO PMBOK PARA O GERENCIAMENTO DE PROJETO DE UMA IMPLAMANTAÇÃO DO SISTEMA ERP

### RESUMO

A implantação dos Sistemas (ERP) tornou-se de uma forma geral nas empresas e organizações, como forma de alcançar a integração da cadeia de suprimentos para melhorar a produtividade e obter vantagens competitivas.

Essas implantações, mais do que tecnologia simples em projetos, revelaram ser complexo e demorado, devido às mudanças estruturais do comportamento envolvido. Este artigo analisa, sob o ponto de vista do Gerente de Projeto, dois casos reais de implantação ERP na Ibico Portuguesa, comparando a metodologia utilizada de gestão em projetos *Project Management Body of Knowledge* (PMBOK) adotado pela Ibico, conclui que o uso da abordagem e melhores práticas do PMBoK pelo Gerente de Projeto poderia ter sido um fator de sucesso nas implantações, particularmente referindo-se os elementos que têm sido apontados como os mais críticos: o envolvimento, planejamento e compromisso dos responsáveis, assim como também a gestão dos *stakeholders*.

**Palavras-chave:** Sistemas Integrados de Gestão (ERP); Companhias e Organizações; Projetos na Ibico Portuguesa; PMBoK; *Stakeholders*.

## CONTRIBUTIONS OF THE PMBOK TO THE PROJECT MANAGEMENT OF AN ERP SYSTEM IMPLEMENTATION

### ABSTRACT

The implementation of Enterprise Resource Planning (ERP) Systems has become generalized in companies and organizations, as a way to achieve the supply chain integration, to improve productivity and gain competitive advantages.

Those implementations, more than simple technology projects, have revealed to be complex and time consuming business projects due to the structural and behaviour changes involved. This article analyzes, through the Project Coordinator's point of view, two real cases of ERP implementation projects at Ibico Portuguesa, comparing the project management methodology adopted by Ibico with the Project Management Body of Knowledge (PMBOK), coming to the conclusion that the use of the PMBoK norms and best practices by the Project Manager could have been a success factor in those implementations, particularly referring to the elements that have been pointed as the most critical: planning, involvement and commitment of top management as well as stakeholders' management.

**Keywords:** Enterprise Resource Planning; Companies and Organizations; Projects at Ibico Portuguesa; Project Management Body of Knowledge (PMBOK); Stakeholders.

## 1 INTRODUCTION

An Enterprise Resource Planning (ERP) System is a software package that allows an organization to manage the effective and efficient use of its resources, including materials, people, and equipment. An ERP system covers a great variety of functionalities in an integrated manner. The ERP most important attributes are the automation and integration of the main business processes, the capability to share data and processes through the whole organization, the production and access to on-line information.

The functionalities of the ERP modules offer a generic solution that covers generic processes. However, the solution is configurable, to a certain extent, to allow the ERP system adaptation to the specific processes of the organization. So, an ERP System implementation consists in finding a compromise between the functionalities available in the ERP and the company business processes. In that sense, Parr distinguishes 3 ERP implementation categories, “Comprehensive”, “Middle-Road” and “Vanilla”, describing their implementation characteristics in terms of physical scope, business processes re-engineering (BPR), technical scope (modifications, customizations), module implementation strategy and resource scope (time and budget). This taxonomy allows top management to understand at an early stage of the process the dimension and implications of the project they intend to involve the company into.

In the ERP systems implementations, the following critical success factors (CSF) are frequently pointed out: top management commitment, project team, clear scope and objectives, project management, change management, training, sponsor’s commitment, implementation model, minimal customization, performance appraisal, expectations management, tests and resolution of software package problems, hardware. The critical analysis of those CSF as well as the management and monitoring of the associated risk factors, is presented by some authors as a must in order to avoid compromising the result of the ERP implementation projects. From those critical success factors, the poor management of the implementation process is considered as one of the main reasons for unsuccessful ERP implementations. The complexity of an ERP implementation, that involves technical issues of hardware and software as well as organization, human and political issues, requires new project management skills. Due to the technical complexity of the system itself, the ERP implementation process is a complex one, demanding in terms of resources, and therefore requires an adequate and careful management, based on a solid knowledge and precise methodology of project management.

Thus, next follows an introduction of the Project Management Body of Knowledge (PMBok) developed by the Project Management Institute (PMI) and then in the last part, a comparison of the PMBoK phases with the ones used in the ERP implementation at Ibico, a multinational company in the office products business.

## **2 PMBOK – A GUIDE TO THE PROJECT MANAGEMENT BODY OF KNOWLEDGE**

The PMBoK considers the best practices and includes proven and efficient methodologies of project management, defining a project as a temporary, unique and progressively worked out initiative.

According to the PMBoK, project management refers to the application of knowledge, competences, tools and techniques to project activities to meet the project requirements.

The Project management work requires a balance between the various elements competing in the Project, elements considered in the nine knowledge areas proposed by the standard: Integration Management, Scope Management, Time Management, Cost Management, Quality Management, Human Resources Management, Communications Management, Risk Management and Procurement Management. The processes covered by these areas are mapped in five process groups: Initiating, Planning, Executing, Monitoring/Controlling and Closing.

The PMBoK does not define a rigid life cycle for a project but identifies a typical sequence of phases that include the process groups above referred.

In the Conception phase (Initiation), the focus is on the identification of the problem and its solution, the project, the evaluation of the project economical viability and a preliminary estimation of its costs in order to decide if the project is feasible and executable. If the project is approved, this will require the organization's commitment to the project initiation and execution. This phase includes the Initiation processes: the Project Charter and the preliminary scope statement development.

In the Definition phase (Planning), the focus is on the solution. This means to conceive and maintain an executable scheme to meet the business requirements that the project intends to respond to. This includes the definition of the users and system requirements, the conception of an initial planning of the organization and the project until getting to the specifications of the objectives and a

detailed work plan able to guarantee the execution of the project and obtaining the expected result or product.

This phase considers the core processes of the Project Management Plan development, the Scope planning and definition through a progressive hierarchical decomposition of the product (Product Breakdown Structure) oriented to the project deliverables, a hierarchical decomposition of the work (Work Breakdown Structure), the activity definition and sequencing, the planning of the resources required for the activities, costs estimation, activities duration estimation, schedule development and cost budgeting (bottom-up costs aggregation). It also considers supporting processes, such as: Human Resources planning, Quality planning, Communications planning, Purchases and Acquisitions planning, Contracts planning and Risk Management planning, including risk identification, qualitative and quantitative risk analysis and planning of the response to the risk.

The Acquisition phase (Execution and Control) focuses on the system development and installation. It considers the Execution, the coordination of the resources for the plan implementation, as well as the Monitoring and Controlling of the project, to guarantee that the project objectives will be achieved. The execution includes system design, production and implementation through users training and acceptance tests. In this phase, the project performance has to be measured on a regular basis to identify major deviations to the plan that might compromise the project objectives, and allow corrective measures to be taken, and even preventive action in anticipation to potential problems. Thus, on the one hand execution processes stand out such as leading and managing the project execution; quality assurance; acquiring, recruiting and developing the project team; distributing the project information; requesting offers and selecting suppliers. On the other hand, monitoring and controlling processes involving the project work, changes, scope, schedule, costs, quality, project team management, project performance reporting, stakeholders' management, risk monitoring and control, contracts administration, based on the use of metrics, variance and performance indices of the Earned Value Management system.

The last phase focuses on the Operation (Closing) and considers the formal acceptance of the project, which means product delivery or project result and project close.

### **3 CRITICAL ANALYSIS OF THE ERP IMPLEMENTATION MANAGEMENT PROJECT AT IBICO**

The research methodology used in this study has been the “Case Study”, being the data collection technique based on the registry performed by the project coordinator during the implementation process and on the documents produced during two real cases of ERP implementation projects at Ibico Portuguesa. The data collected has been analyzed based on the characteristics of the activities proposed in the phases of the PMBoK, in order to identify the reasons why some of them have not been realized.

Regarding conception phase (Initiation) and after an analysis of the two ERP implementation projects in the light of the Project Management Body of Knowledge developed by the PMI, we can conclude that in both cases, top management had a careful attention to the Project. As in many organizations, struggling with limited resources, Ibico top management worried about analyzing the problem, identifying alternatives and solutions, estimating the costs and benefits, as well as validating the project feasibility. Even not appealing to more adequate techniques and tools, which could have helped to a better estimation of the investment and its return, the evaluation has been the starting point for the project initiative. In both projects, objectives and project scope have been defined, even if too extended in the first project, as well as an organization model identified, even if too complex in the first project. In the first initiative, objectives were too ambitious taking into account the lack of competences of the internal resources, both in terms of project management and in terms of integrated information systems, Ibico went from programs running on individual PCs to a completely integrated system, that required the implementation of new processes based on the MRPII concepts (new as well at that time). The Initiation phase has been relatively well developed.

Regarding the Definition phase (Planning), we have to recognize that it was conducted in a deficient manner. Even based on proven methodologies developed by the companies involved in the project, lacunas appeared at the beginning with the product analysis – the Product Breakdown Structure (PBS) – that has not identified in an exhaustive way the deliverables and milestones of the project and therefore did not allow an adequate and complete decomposition of the work – the WBS, Work Breakdown Structure – in sequenced activities that can be managed, measured, monitored and controlled. The planning was deficient also for not considering appropriately the Time and Cost management, staying at the determination of execution windows without allocating

quantifiable and quantified resources to the activities, and staying also at the identification of the “visible” costs of the project, forgetting to quantify the costs of the resources allocated to the project and their management, sub-estimating the total cost of the initiative. However, in the second project the initial project has been completed with other documents that allowed a better monitoring and controlling of the project, even without a complete integration of the activities, deliverables and milestones in a unique document. Planning has also not approached or only in an incomplete manner the aspects related to Quality, Communication, Purchases Management, Risk management, thus during the project execution phase, some of these elements have been considered even in an incomplete manner. This definition phase is the most complex of the whole project, and requires more time and care in its development. This is an essential phase which will determine the project result, its success or failure. It seems that in both projects, this phase has merged with the Initiation phase not standing out the planning activities in a separate phase itself. Thus, it has been wrongly believed that the project starts, after being initiated, with its execution.

We can conclude that a planning supported by a proven Project Management methodology is essential to the success of any project, either being of an extended scope as in the first wave of BPCS implementation, or being more concise such as the Financial Modules implementation, either being from a Comprehensive or Vanilla. Here the methodology is essential, thus it is a guideline for the implementation of good practices and methodologies to develop an adequate and complete planning towards success.

Regarding the Acquisition phase (Execution and Control of the project), due to a lack of good planning, an Earned Management Value system, which allows, during the project, to report in a concise and consistent manner the project performance and forecast the project completion date and cost during its execution, could not be implemented. In both projects, monitoring consisted in a simple evaluation of the completion percentage allowing only to identify the progress of the project, but not to forecast neither delays nor variances in terms of costs, and then take proactively corrective measures. However, we can consider that, in the second project, there was an improvement related to the changes control and management and risk monitoring, although not referred in the planning phase.

In the second Project, a formal Project closing has taken place, what did not happened in the first project, where it has not been considered in a timely manner that only part of the objectives were achieved. Thus, at an early stage, a re-evaluation of the financial area should have been done and a new plan proposed for the implementation, therefore creating a separate project.



Comparing those two projects, apart from the differences above identified, two other aspects have determined their result, failure in the first case and success in the second: top management commitment and stakeholder's management. In the first project, top management represented at the "Steering Committee", has often shown disagreements regarding the project orientation, causing conflicts and obstacles to the progress of the project; in the second project, the top management involvement has been firm, incisive and effective, raising questions and issues in a clear and objective manner, focusing on obtaining results. Based on the experience of the first project, marked by a strong resistance to changes, in the second there has been a special attention to the involvement of the stakeholders, in order to break resistances, empower, motivate to the production of the expected results. It was hard, a daily fight during 3 months, fight from which the project team came out tired but as a winner!

#### **4 CONCLUSION**

Considering the characteristics of the ERP implementation projects and the potential of the PMBoK presented in point 1 and 2 of this paper and the critical analysis of the Ibrico case study in the light of this framework, we can draw the following conclusion: the understanding and application of the PMBoK by the project coordinator could have influenced its managing role regarding the elements which revealed as the more critical: planning, that needs to be adequate, accurate and complete; effective top management involvement and commitment, and stakeholders management to break resistances, motivate and compromise towards success.

Thus, the understanding and application of the PMBoK concepts by the Project manager and the competences acquired in other development Projects are, without doubts, success factors for an ERP implementation.



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