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**IMPLEMENTATION
OF AN ERP SYSTEM
(ENTERPRISE
RESOURCE PLANNING)
IN SMALL COMPANIES:
AN ANALYSIS OF THE
MAIN BENEFITS**

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Abstract: The implementation of the ERP system in small companies is of paramount importance in such a competitive and globalized market. Information Systems (IS) allow companies to integrate their information, increasing efficiency and ensuring quality in their unified process. This article aims to analyze the importance and benefits of the ERP system in small businesses. The case study carried out in a small service company makes it possible to identify the relevance and benefits of a customized ERP system adapted to the company's process.

Keywords: ERP system; Small business; Implantation; Information system.

INTRODUCTION

The Enterprise Resource Planning (ERP) system is a software platform designed to provide integration, enabling a unified flow of information and data storage.

The evolution and growth of increasingly competitive companies due to the globalization of the economy and the integration of systems require a degree of commitment and continuous improvement of their processes, products and systems, as well as a clearer and more objective philosophy. The main objective of the ERP system is to integrate the various departments of the company, unifying and allowing an interaction between the sectors of the company, thus increasing efficiency, quality, agility, speed in the execution of tasks, standardization of operating systems, among other benefits discussed in this study.

The structuring of the process depends on the adequacy and development of the necessary tools for smaller companies, which in turn have a leaner and easier to understand system due to its size, but it still has the obligations and the different departments that move it, for this reason, the efficient interaction brings the company one of its greatest benefits,

which is the optimization and integration of its data and the easy communication between departments. Therefore, it is possible to add value to the company with the tools inserted, helping to guarantee and identify flaws in the process and also to improve the service provided.

THEORETICAL REFERENCE

ERP SYSTEM (*ENTERPRISE RESOURCE PLANNING*)

An ERP (Enterprise Resource Planning) system can be a powerful weapon to increase company competition, but its implementation can be very risky if not properly planned and managed (Hongyi et al, 2015). For Colangelo Filho (2001) they are systems that allow the standardization of business processes, producing and making information available in real time. According to Turban, Mclean and Wetherbe (2010), an Information System (IS) collects, processes, stores, analyzes and disseminates information for a specific purpose. According to Norris et al. (2001), the function of ERP is to organize, codify and standardize the business processes and data of a business group.

The ERP controls the company, handling and processing its information. All processes are documented and accounted for, generating well-defined business rules and allowing greater control over some vulnerable points of the business, such as cost management, fiscal and inventory control. The adoption of these systems puts an end to the various systems that worked in isolation in the company, with redundant and unreliable information." (MILTELLO, K. Who needs an ERP? InfoExame, p.140, Mar. 1999).

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BRIEF HISTORY OF ERP

The ERP had its evolution over time, where in the 50’s the modern concepts of corporate control and management started their activities, even with the very high cost for the time of the technology that used large mainframes that made the first inventory control systems work.

SMALL BUSINESS (EPP)

According to SEBRAE, Small Business (EPP) is an enterprise with annual gross revenue between R\$ 360 thousand and R\$ 3.6 million. You may opt for Simples Nacional, if you do not carry out an activity prohibited by LC 123/2006.

LIFECYCLE OF AN ERP SYSTEM

The life cycle of ERP systems includes the stages in which information systems development projects go through their implementation. SOUZA (2000) states that traditionally, the life cycle of an information system involves the stages of requirements gathering, project scope definition, alternative analysis, system design, coding, testing, data conversion and maintenance. For Corrêa (1998), success in adopting an ERP starts with selection. According to Rezende and Abreu (2000), it is evident that for the acquisition of this technology, the structuring of business functions and their respective peculiar characteristics must have been widely discussed and formally defined.

The company must evaluate its systems and carry out a survey of suppliers and evaluate the work that must meet the needs and the system.

[...] The adoption of an ERP system by the company involves several steps that are based on a life cycle model of ERP systems, which

Company size	Employee Numbers	
	Trade and Services	Industry
Micro enterprise	Até 9	Até 19
Small business	10 a 49	20 a 99
Midsized company	50 a 99	100 a 499
Large-sized company	>99	>499

Table 1 – Classification of MSEs according to the number of employees.

Source: Sebrae (classification used by the Sebrae Research area).

Classification	Annual billing (R\$)
LITTLE	From 5 to 30 million
AVERAGE	From 30 to 100 million
GREAT	Over 100 million

Table 2 - Classification of size according to ERP supplier companies

Source: MENDES; ESCRIVÃO FILHO, 2003, p.254.

BENEFITS OF ERP SYSTEM IN SMALL BUSINESSES

Companies have their own system to control their activities, some in an efficient and organized way, but limited and others without the necessary control to identify their movements, which can lead the company to chaos. These manual, physical systems as in books or spreadsheets work for companies that are just starting their activities. After growth, hiring new employees, creating other departments, the complexity of the business begins to increase and so does the volume of operations, which can lead to divergences in financial control, inventory, cash, production, among others.

Companies that do not control their system end up suffering from loss of information and important documents, fines, loss of consumption due to lack of control, etc.

The ERP system serves precisely to regulate this process and help control the company, facilitating the communication system between departments and the control of information and documentation.

ERP is of paramount importance for the growth and success of a small business and the biggest advantage in implementing the system is precisely the size of the company.

Disadvantages of ERP system

The disadvantage for companies is the question of the value of the investment and the way in which the investment is given to the needs of the organization. The adequacy of the different systems and the interaction do not always occur in a desired way and the adjustments can increase costs when possible.

One of the main disadvantages of the ERP system is the difficulty of implementing the system and the time it can take. This difficulty is due to the change that must occur at organizational levels and in the synergy of departments.

Lozinsky (1996) refers to the need for an external consultancy to implement the ERP system. A small company with low resources of people and lack of knowledge and time must evaluate the need for an external consultancy in order to minimize errors and ensure a more efficient and faster implementation according to the needs of the organization.

ERP SYSTEM IMPLEMENTATION IN SMALL BUSINESSES

The implementation of the ERP system in small companies is usually done through the insertion of system modules. Due to the system being better, less complex, the demand and interaction of departments can take place gradually, according to the creation of new departments in the future as the company grows.

According to Norris et al. (2001), the organizational structure is directly affected with the implementation and change in processes. An analysis must be done and redesign, rearrangements of the processes can lead to change in the staff. This can affect the development of work and training will be required, as well as leadership present in the implementation phase.

The implementation can directly affect the performance of daily activities, people and the organizational structure as a whole. In this way, systems can and do affect the productivity and quality of an organization's services and processes in countless ways (REZENDE; ABREU, 2000).

In the implementation process, Lozinsky (1996) divides the implementation of ERP systems into four stages. Bancroft et al. (1998) also presents 4 similar steps, adding specific steps for the R/3 system. The phases mentioned below summarize the entire stage of this process.

1^a Phase: Survey the current situation.

2^a Phase: Define the desired situation.

3^a Phase: Test, customize, configure.

4^a Phase: Operation initial phase

The ERP implementation, in its context, regardless of the dimension of the process, goes through a transformation or alignment of all the company's businesses.

Change processes are always complex and intense within an organization, and can often cause discomfort among employees.

The Big Bang or Phase refers to ERP implementation. Big Bang ERP implementation strategies are instantaneous, where every module of the system is implemented simultaneously and instantly. Another approach is to implement step-by-step, regardless of the location or nature of the business. For small businesses, the Big Bang strategy approach is best suited.

Using the Big Bang strategy is riskier than the Phases model due to the following factors:

- a) Difficult to reverse in a negative situation
- b) Several aspects can go wrong
- c) Risk of serious system damage
- d) Complete tests are difficult to perform

The Big Bang can unleash a sense of urgency throughout the organization and create a dynamic that may not be possible to admit in long-term projects such as phased ones. When the implementation is done in phases, it builds more trust and helps to demonstrate the benefits it brings to the company.

RELATION OF THEORY WITH PRACTICE

This study was carried out through bibliographic research, using books, researched items, theses, professional and field experience, as well as a case

study carried out in the company ROMA Technologies and in the study developed in a group referring to the project of the discipline Project Competition that deals with the implementation of an ERP – SAP system for the MBA course – International Executive of Project Management at Fundação Getúlio Vargas (FGV). For Silva and Menezes (2001), the case study method involves the deep and exhaustive study of one or a few objects in a way that allows their broad and detailed knowledge, providing the researcher with a practical way to introduce research techniques by integrating the use of tools for gathering and analyzing information.

Roesch (1996) states that the use of the exploratory mode aims to raise questions and hypotheses for future studies through qualitative data.

The single case study (*single-case*), involving a company located in the state of São Paulo in the service sector represents a unique opportunity for a particular researcher to study.

This study allows us to relate theory to practice.

CASE STUDY

In this study, a single case study of a small company that went through the process of implementing the ERP system will be presented, and through all the processes from the survey of the need to the problems faced with the implementation, as well as the differential reaching with the ERP.

ROMA TECHNOLOGY CASE

Company: ROMA Technology

ERP system used: ERP Volpe Small Business / Professional

Interviews conducted between March and April 2017.

Interviewees: Financial Director and Technical Manager

MAIN POINTS OF THE CASE

Companies in the field of providing calibration services are generally small, as is the company in this case. Due to the company's work and its low complexity and single unit, the best system found by Roma Technology was the Volpe ERP for small companies.

With the professional module, company i identified that its needs would be met, since its biggest concern in addition to all the benefits of the system, the generation, issuance and control of invoices was a strong point in the decision to implement the system. Another strong point identified by the company was the financial issue, where controls are more organized and reliable, allowing payments and collections to be carried out more efficiently.

SURVEY OF THE NEED

ROMA Technology identified the need for implementation, through the difficulties encountered to operate in an organized and efficient manner and due to the great competition faced. The company identified an opportunity to reduce costs by increasing its organizational efficiency and promoting itself with all its investment in the quality and reliability of its operations.

PROBLEMS FACED

The problems encountered by ROMA Technology was the raising of capital to install the *software*, afterwards, it had to carry out intense training for all employees. It is known that technological advances cause impacts at first sight due to the complexity and the process of change.

Adaptation to the system by the company's members took place slowly, due to the limited resources available from the company and its routine activities. This process, in parallel with the company's activities, caused the reported problem and to minimize them, a training and review routine was implemented.

BENEFITS

The ERP system enabled the company to have greater control over its data, documents, spreadsheets, information security, financial, managerial, technical, fiscal, logistical control, among others.

It avoided waste of time, money and rework making your process more efficient and practical.

The company started to use a reliable system, and to have greater notoriety and appreciation in the market. Your costs have been reduced and your profits maximized. Losses of inputs and documents ceased to exist through greater control of information. Timely payments of the company's accounts was another point of paramount importance, lowering its interest expenses arising from late payments.

CONTINUOUS IMPROVEMENT PROCESS

Updates and training are needed, pressure for results, intense work to maintain the system properly and resistance to non-use. Due to the complexity of the software, more in-depth knowledge is absorbed after a period of recognition, adaptation and training.

The PDCA cycle (Plan, Do, Check and Action), method used in the control and continuous improvement of a process is used as an interactive way to ensure the improvement continuous process. (Figure 4)

INTERVIEWEES' COMMENTS

About ERP system for small businesses: *"It's great that eyes are focused on small businesses that are currently moving the Brazilian market and a system like this should be a mandatory part of any small business in Brazil"*.

About the deployment decision: "The search for a differential is not always easy, you have to study the market, its requirements

PDCA cycle



Figure 4: PDCA cycle.

Source: Internet (ADM moment).

and identify and bring what is new, better and efficient so that the dispute in the job market is overcome”.

About the implementation: *“It is necessary to know how to deal with the new. The change process appears to be a smooth and well-accepted thing until it happens.”*

CONCLUSION

Through countless references on models of ERP systems, a study was carried out to climb the molds of implantation of the ERP system in small companies aiming at the benefits, advantages and disadvantages.

In the course of this work it was observed that: companies that sought the implementation of the ERP system made them more effective, being able to obtain significant gains in relation to the competitors that do

not have this information system. With the centralized information, the unification and interaction of the departments in a single system, brought agility, speed and quality in the process, avoiding errors and waste in the communication process, as well as the archiving of forms and documentation in different places and different formats.

The fact that they are small, with few employees, makes the implementation process easier in some aspects that could be more complex, in the case of companies.

The initial restructuring model may encounter resistance from employees, it is a fact that the change, advancing in the technological aspect, scares, but with the adaptation to the process, it was found that the advantages pleased more than created discomfort.

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