Organizational and National Issues of an ERP Implementation in a Portuguese Company

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Abstract.

This technical research report describes a case of an Enterprise Resource Planning (ERP) implementation in a Portuguese SME. We focused on the identification of organizational factors that affect the ERP implementation project. We also analyzed the ERP implementation project from a national cultural perspective using Geert Hofstede's dimensions. These dimensions were used to explain some of the attitudes and behaviours during the ERP implementation project. The findings suggest that some of the problems in ERP implementation projects are not of technological nature but may be attributed to organizational factors while some issues related to national culture.

Keywords: Enterprise Resource Planning, ERP implementation, grounded theory, organizational culture.

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1. INTRODUCTION

In recent years, it was demonstrated that Small and Medium sized Enterprises (SMEs) strongly contribute to national economies. Their critical role in maintaining healthy and dynamic economies within industrialized nations and in introducing innovation was highlighted by researchers in the 1970s. SMEs constitute around 95 percent of enterprises and account for 60 to 70 percent of employment in different countries around the world. The adoption of ERP systems is now reaching SMEs, bringing up problems in ERP implementation projects which are specific to this type of companies. Large growth rates in ERP implementatiom, especially among SMEs, are expected worldwide (Everdingen et al. 2000). The growing interest in ERP systems may be explained by their proclaimed benefits.

This technical research report describes a case study carried out in a Portuguese SME that in 1998 implemented the SAP R/3 system following a big-bang implementation approach. The big-bang approach is characterized by the implementation of all ERP modules at the same time. The interpretive perspective adopted in this research reflects our aim of understanding the phenomenon of ERP implementation in a SME within the organizational and national contexts where it occurs. The report is structured as follows. First we present the research methodology. In this study we combined case study method with grounded theory method. Next, we describe the case study background followed by a presentation of findings. Hofstede dimensions of national culture are then related to the case study. Finally, the conclusions and the implications for further research are outlined.

2. RESEARCH METHODOLOGY

As we believe that the understanding of ERP implementation cannot be achieved without considering the organizational context where it occurs, the chosen research method was an indepth case study (Yin 1994). Yin (1994) recommends the use of case studies when researchers want: to define topics broadly rather than narrowly; to cover contextual conditions and not just the subject of study; and to rely on multiple and not singular sources of evidence. In order to identify the organizational factors that affect an ERP implementation in SMEs we opted for an interpretive research approach since it assumes that "our knowledge of reality is gained only through social constructions such as languages, consciousness, shared meanings, documents, tools, and other artifacts" (Klein and Myers 1999, p. 69). Interpretive research does not predefine dependent or independent variables and it attempts to explain phenomena through the meanings that people assign to them (Orlikowski and Baroudi 1991).

We started the case study by defining a plan to collect data. The main technique chosen for data collection was semi-structured interviews. Following the contact with key informants in the company, interview schedules were agreed upon. Interviews were tape recorded and transcribed to ensure accuracy of written data, and to minimize researcher's bias. Initially, three interviews were made with the project manager, a member of the project team and a key-user. Then, we interviewed the remainder members of the project team. We also analyzed documentation created during the SAP implementation project provided by the project manager. The documentation helped to understand the project background and to prepare the questions for the interviews. Data from interviews was triangulated with the documentation so far accumulated. In order to build theory from this case study, we adopted the Grounded Theory Method (GTM).

GTM is a general method for building theories that are grounded in data systematically gathered and analysed (Glaser and Strauss 1967). This methodology was initially presented by Glaser and Strauss (Glaser and Strauss 1967) in their book The Discovery of Grounded Theory. Strauss and Corbin

(1990, p. 23) explain that by using GTM a theory is inductively derived from the study of the phenomenon it represents. That is, it is discovered, developed, and provisionally verified through systematic data collection, analysis, and theory stand in reciprocal relationship with each other. One does not begin with a theory, and then prove it. Rather, one begins with an area of study and what is relevant to that area is allowed to emerge". The GTM proposes an inductive approach that allows us to make theoretical propositions in the form of the paradigm model provided by Strauss and Corbin (1990). The coding process of all interviews and documentation allowed major themes/categories to emerge. Then, we used the paradigm model proposed by Strauss and Corbin (1990) to relate these categories. Briefly, the paradigm model (see figure 1) encompasses the following elements: causal conditions, the phenomenon, the context, the intervening conditions, strategies and actions, and finally the consequences.

Finally, in order to analyze the national culture perspective, we used Hofstede (1991) dimensions of national culture. The paradigm model context was so extended with an additional category: national context. The national perspective is explained in section 5.

3. CASE STUDY BACKGROUND

3.1 Organization Profile

PhotoPics S.A. (fictitious name) is the Portuguese subsidiary of the PhotoPics multinational company. The PhotoPics Group was created in Germany around 1849 to develop lenses and microscopes. The company started in Portugal in 1973 and is now the main unit of the PhotoPics Group worldwide. It has 660 employers, most of them wage earners with approximately 100 salaried employers. The company has a strong dependency on the parent company, which owns 91% of the Portuguese company. 95% of the sales volume is concerned with one single product - the PhotoPics AG camera.
In what concerns information technology, at the beginning of 1997, PhotoPics had only dumb terminals connected through a dedicated infrastructure. The software system used was Comet Top, a software package from Nixdorf. It was used to support logistics, production planning, payroll and accounting. Human resources department used a software package called Progress, no integrated with Comet Top. Only the administrator and the financial director used personal computers with MSWindows 95 and MSOffice 95. The technological infrastructure included dot matrix printers that were exclusively used to print reports. The company did not have an Internet connection and the information interchange with the parent company was made through a point-to-point connection using modems via the Comet Top application. During 1996 and 1997 the parent company started its preparation to deal with the Y2K problem and the Euro conversion. It considered an evolution from the Comet Top system to a MSWindows environment and the adoption of an ERP solution (Oracle, Baan and SAP were considered). The main reasons to adopt an ERP system were: the Y2K problem (Comet Top software did not use four digits in dates); the Euro conversion (the company needed to use Euro after September 2000 and Comet Top was not prepared to handle this issue); the integration with other companies of the group (different Comet Top versions were being used and improvement of information quality was being felt as necessary); and the change of PhotoPics's administration after twenty five years.

In the first quarter of 1997 the company selected the SAP R/3 system. The main reason was that this software seemed to be the best answer to the company needs. The fact that SAP is a German software certainly transmitted security to a German company and also contributed to the decision. During that year Comet Top evolved to a Unix server, dumb terminals were eliminated, and an Unshielded Twisted Pair (UTP) computer network was implemented. Twenty personal computers were acquired

to access to Comet Top. Fifty users were trained on using these PCs. The average age of these users was 40 years old.

3.2 Consultancy

Several consultants participated in the SAP implementation at PhotoPics. The main consultants involved were from one of the five bigger consulting companies in the world. Consultants selected by the parent company were from another consulting company. The consultant selection made by the Portuguese branch of PhotoPics was due to: SAP recommendation, the geographic location, and because the PhotoPics financial auditors knew the consulting company. At the time of the implementation project this consulting company lacked senior personnel in the SAP implementation area, a fact that was then unknown to PhotoPics.

3.3 Implementation Phases

PhotoPics followed a typical ERP implementation lifecycle with a big-bang approach. The project goal was the implementation of SAP R/3 system, version 3.1H with the following modules: materials management (MM), sales and distribution (SD), production planning (PP), financial accounting (FI), controlling (CO), fixed Assets Management (AM) and Quality Management (QM). The number of expected end-users was 30 to 40. The parent company imposed a unique mandatory production plan and a unique accounting scheme. At the beginnin g of the project, it was estimated that no be-spoke development would be made and that only enhancements to forms and reports would be tailored. The implementation was carried out along the following phases:

- ? **Planning** - This was the basis for the entire project. The goal of this phase was to detail the project definition and its functional needs. The project structure was defined. This phase was arduous due to three main aspects: the definition of all processes that attempted to be implemented in the new system, the contact with all the process stakeholders, and the difficulty to obtain information.
- ? **Design** - The goal of this phase was to produce the technical specification of how to implement the chosen solution and the beginning of the parameterization and the preparation of a prototype that allowed the demonstration of the system working for each planned situation. This phase was felt as fundamental for the system comprehension. In this phase the internal project team took its first contact with the SAP sys tem.
- ? **Realization** - The goal of this phase was to obtain the configuration of the SAP system according to the design, the development of some complementary programs that served as interfaces to SAP, and the creation of training manuals and final tests.
- ? **Go-live** - The goal of this phase was to put the new system at work. The go-live phase was started a month behind schedule due to the scope of the project. The expressions "the company will stop" or "it will not work" were in the mind of everyone, but everything worked perfectly. At the end of this phase an analysis of the general difficulties of the SAP implementation project was made.

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4. ERP IMPLEMENTATION PROJECTS IN SME: ORGANIZATIONAL PERSPECTIVE

Figure 1 represents the paradigm model that we developed for the ERP implementation project in PhotoPics. The paradigm model includes both, the technological and organizational perspectives. Next, we describe the paradigm model components related with the organizational perspective.
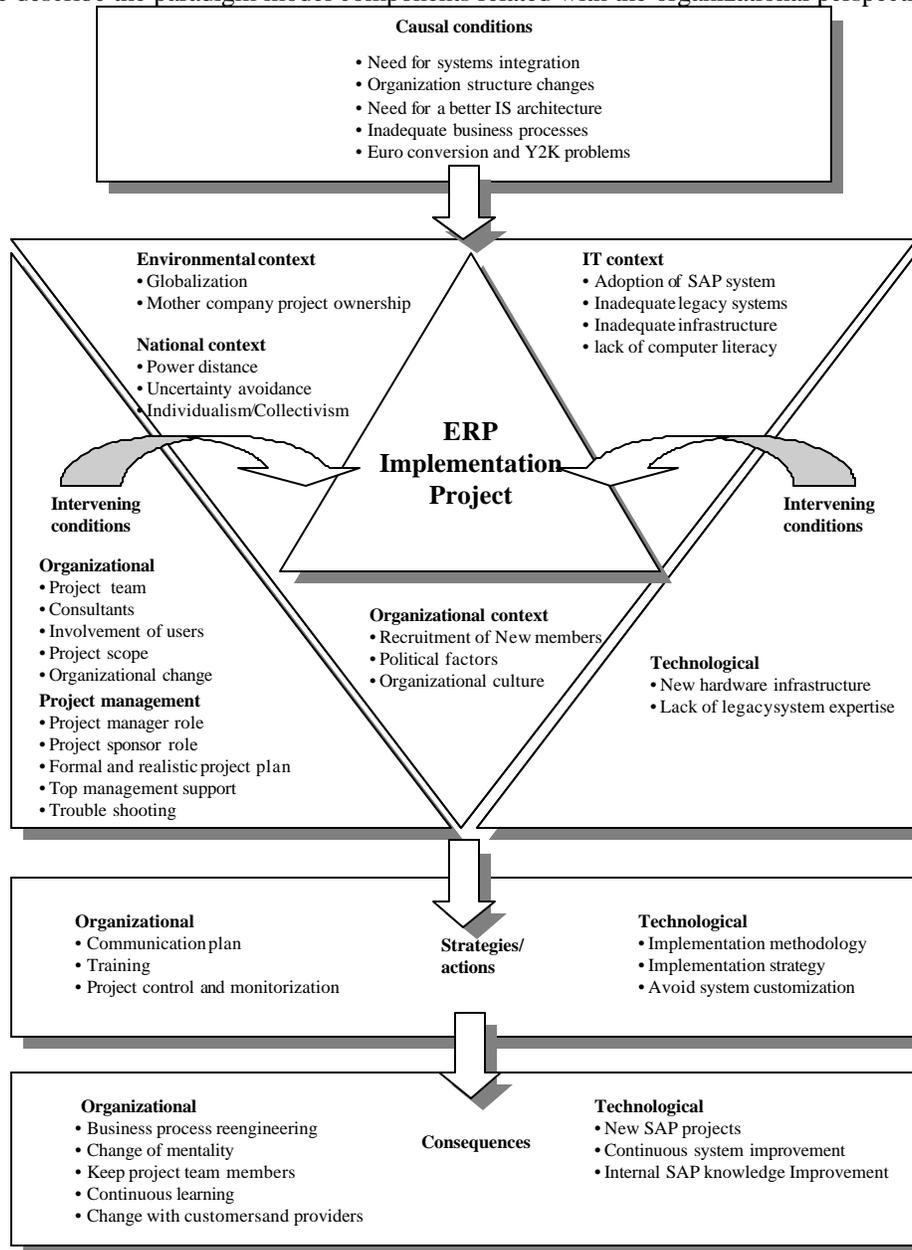
Causal conditions

- Need for systems integration
- Organization structure changes
- Need for a better IS architecture
- Inadequate business processes
- Euro conversion and Y2K problems

Environmental context
- Globalization
- Mother company project ownership

IT context
- Adoption of SAP system
- Inadequate legacy systems
- Inadequate infrastructure
- lack of computer literacy

National context
- Power distance
- Uncertainty avoidance
- Individualism/Collectivism

ERP Implementation Project

Intervening conditions

Organizational
- Project team
- Consultants
- Involvement of users
- Project scope
- Organizational change

Project management
- Project manager role
- Project sponsor role
- Formal and realistic project plan
- Top management support
- Trouble shooting

Organizational context
- Recruitment of New members
- Political factors
- Organizational culture

Technological
- New hardware infrastructure
- Lack of legacy system expertise

Strategies/ actions

Organizational
- Communication plan
- Training
- Project control and monitorization

Technological
- Implementation methodology
- Implementation strategy
- Avoid system customization

Consequences

Organizational
- Business process reengineering
- Change of mentality
- Keep project team members
- Continuous learning
- Change with customers and providers

Technological
- New SAP projects
- Continuous system improvement
- Internal SAP knowledge Improvement

Figure 1 – A model for ERP implementation projects in SME.

4.1 Phenomenon

Strauss and Corbin (1990, p. 101) stated that phenomena are "the central ideas in data represented as concepts". According to their account, the purpose behind naming phenomena is to enable researchers to group similar events, happenings, and objects under a common heading or classification. The phenomenon in the paradigm model is represented by the central category (sometimes called core category), which represents the main theme of the research. The phenomenon addressed in this study is the implementation of an ERP system in a SME. ERP implementation at Photopics was considered to be a successful one.

4.2 Causal Conditions

The circumstances that led to the ERP implementation at Photopics were: the need for systems integration worldwide at PhotoPics Group; the need for a better IS architecture at Photopics SA; most of the business processes were inadequate and they needed a strong reengineering effort; and the Euro conversion and Y2k problems were not solved by the legacy systems.

4.3 Context

4.3.1. Environmental Context

By the time ERP implementation at Photopics took place, many other companies, including SMEs, were leaving their legacy systems and migrating to ERP systems. Problems related with the Y2K and the unavoidable changes in IT systems related to the forthcoming adoption of a single currency by most of the EU countries were viewed as strong justifications for carrying out deep changes on IT systems. The parent company decided to integrate the information of all its subsidiary companies worldwide. Therefore, the company decided to unify information and to have a better control of its subsidiary organizations such as the Portuguese PhotoPics. The parent company decided to adopt SAP R/3 as the common ERP system worldwide. The parent company kept the ownership of the project implementation, but each local organization had total freedom in the implementation process. The parent company only imposed that common information must had the same definition worldwide. This fact caused some delays in some tasks since project teams had to wait for the approval before some tasks could proceed.

4.3.2. Organizational Context

Before the SAP implementation project started, the administration decided to recruit new members, with academic education and proved skills and experience in their field. Changes at the organizational structure were introduced: a department of Logistics was created. However, at that moment, PhotoPics had a conservative organizational culture. The power and influences were concentrated in just a few members with long careers within the organization. Almost all the senior staff had no academic education and their whole career had been made within the organization. The channels of power and communication were quite complex. Most of the business processes were complex and inefficient. Technology and innovation were associated with costs and troubles.

Political factors had a strong impact on this project. The interests of stakeholders within the organization were challenged as senior and middle levels lost power and influence. Many employees feared losing their jobs or that such an expensive project could originate an organization rupture.

Many employees also feared the expected increase on their expected efficiency and performance control measures. Some managers intentionally concealed information about their intentions with the SAP system to team members, some other managers disseminated false information in attempts to discredit the SAP project, while others avoided participating in the project. Top administrators faced an internal conflict as they were being forced to carry out changes that they felt that could be against their interest. Conflicts among senior managers arose as they tried to dominate and impose their view in the SAP project, since most of them were aware that the results of the SAP project could influence their future career within the organization.

4.4 Intervening Conditions

4.4.1. Organizational

Internal Project team – the implementation project structure is represented in figure 2. Most of the internal team members were new to the organization. The project team included young university graduates that recently completed their studies. Although these people had no organizational and/or SAP knowledge, they had very good skills and they were very motivated to learn. The purpose of hiring these people was to prepare them for performing to work in the organization and to develop internal knowledge in SAP. This also minimized the risk of expertise turnover.
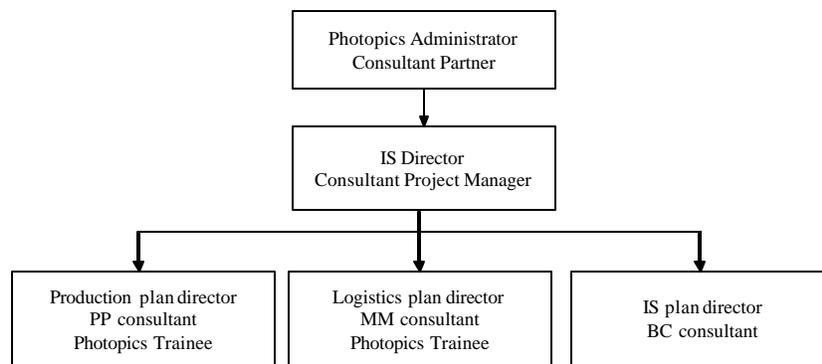

Figure 2. The ERP implementation project structure.

The team members hired specially for the SAP implementation didn't know the company well. So, they could carry out the analysis process from a more neutral position and work on the improvement of business processes without bias. The project team included key-users and chief department directors. The directors were assigned the responsibility of the SAP modules corresponding to their own departments. According to the project manager, the responsibility for implementing each module was given to each current domain manager, but logistics and IS directors were new within the organization. Currently, they admit that their lack of SAP and business knowledge and the lack of knowledge about organizational culture and politics were weaknesses. The involvement of key-users was also important. This helped them to adapt to the new system and to help in the parameterization stage (third phase). They brought in operational knowledge and they served as enablers of change in their part of the organization.

External Consultants – External consultants played an important role in the whole project. There was a careful selection of consultants according to their skills. However, the positive expectations

regarding the role to be played by consultants soon disappeared as the project started. Some of these consultants abandoned the project as they moved to other consulting companies. Due to the consulting company lack of experts at that moment, most of the consultants newly allocated to the project were junior consultants with lack of knowledge in SAP projects and the PhotoPics business. Unfortunately for PhotoPics, which situation was not anticipated in the contract agreement. This caused a delay in the project. The positive side of these junior consultants was their motivation and dedication for the project.

As soon as the internal project team started getting SAP knowledge, they decided which consultants should remain and what new consultants should be hired. There was a lot of turnover in relation to consultants with some consultants remaining only part-time in the project. Since the project manager felt quite insecure with the consulting company, he decided to hire other external consultants to cooperate in the project in specific activities. The role of these 'impartial' consultants was crucial to improve the quality of the project and to help the project team to make decisions in aspects about which it lacked knowledge.

User involvement - Users were involved in the project even though some claimed the contrary. Due to their lack of business knowledge, team members interviewed users in the analysis process, and managers approved the processes procedures. In most cases users themselves did the process analysis for their specific processes. Key-users were particularly relevant in this task and during tests. Members of the project team reported that the major problem when involving users is that each user thinks his/her opinion is more important and valuable than that of others (see political factors in organizational context section).

Organizational change - The organization started changing its processes during and after the SAP implementation. Probably, due to the lack of experience in change management from the project manager and the consultants, there was not a formal organizational change plan. The organizational change affected all levels and aspects such as organizational structure and culture. Probably the most important change was the creation of the logistics department that took over logistics functions carried out before by the financial department.

The project manager mentioned that organizational change procedures should exist, since several job descriptions were changed and/or eliminated and in some cases need for training could have been predicted. In most cases that aspect was analyzed a posteriori. The project manager believed that an organization with a good human resources management should be able of doing a good organizational change programme, when employees see their jobs changed and need intensive training, or some functions are emptied, some employees must look for an alternative within the organization or outside. If no precautions are taken, an organization may be confronted with several employees with long years of career that do not want to retire or cannot be pushed to retirement. At that time, the implementation methodology did not incorporate specific procedures for knowledge management or organizational change management. Top management started, facilitated and supported the organizational changes and implied decision-making tasks during the project. Another aspect was that the changes were visible only within a one year span after the system go-live. The organization needed one year to adapt, as well as to understand the new organizational model.

Project scope - The project scope definition was quite limited. It focused mainly on the modules and the functions to be implemented. In the case of PhotoPics, the lack of project strategic vision was a weakness. Since the SAP system was imposed, the project manager and top management did not carry out a strategic analysis of the implementation, especially in what concerns long-term impact. Goals were not properly defined at the beginning. The single goal to be expressed was that SAP implementation would be carried out within a determined period.

4.4.2. Project Management

Project manager - The project manager was recruited specifically for the SAP implementation project. He made the connection between the implementers (internal team members and external consultants) and top management. He now admits that someone would have better performed the job with experience in SAP, especially at the early stages of the project. The project manager stresses that skills to manage conflicts and people are crucial in a project of this kind. He says that a SAP project is a task of managing willingness, expectations and conflicts rather than a technology implementation project. As PhotoPics is owned by a German company, mastering the German language was an important competence for the project manager although that was not considered at selection time. This was fundamental to communicate and share knowledge with the parent company and it contributed to solve many problems and to improve collaboration.

Top management support - Top management support and commitment were critical to achieve success in the project. Top managers were always available to discuss doubts and trouble-shooting and they made prompt decision-making in order to avoid bottlenecks. This commitment was vital for disseminating the project to the whole organization and especially for dealing with SAP's opponents. It was the organization CEO who played the role of project sponsor. According to most interviewees he was the person that drove forward the SAP project.

Trouble shooting - Several problems appeared along the SAP project mainly due to project team inexperience and to the political factors described above. Two main issues affected the SAP project: the lack of knowledge about the legacy systems and the difficulties with data conversion. In what concerns the legacy system, there was lack of documentation and there were no experts in the system. Most of the information was obtained via the parent company. The data dealt with by the legacy system was not enough for the new system, or it was not structured according to the new business model. Therefore, there was the need to create several conversion programs and some manual data insertion. With the SAP knowledge acquired meanwhile, the project team admits there were better data conversion solutions that those adapted in the project. One of the problems was that the parent company imposed a conversion program (from the same vendor of the old legacy system) and this was not a good solution.

4.5 Action/ Interaction Strategies

Communication plan - the communication plan was divided in two types: communication inwards (between team members and with top management) and communication outwards (with the rest of the employees). Inwards communication worked very well. A special room was allocated to team members that facilitated knowledge sharing and cooperative work. In what concerns outwards communication, the project team regularly presented newsletters, invitations to participate in promotion events, and an intranet was implemented. However, the interest of employees was minimal. As the project manager mentioned, employees were more worried on how much money was being spent.

Training - The consultants proposed a training plan that was accomplished. However project team members complained about their training: training was made at the end of the design phase instead of the end of the planning or at least the beginning of analysis phase; training was very basic and focused in the potential of SAP, and trainers had little training experience. Therefore, team members developed their own skills based in self-study and self-training during the project. Team members recognized that training should have been done earlier in the project.

In what concerns of end-users, the consultants provided the initial training but as soon as team members developed SAP knowledge, they have been the responsible for training. The first step in end-users training was to define a training plan that included basic train in computers use because almost all the users were computer illiterate. The training started early for end-users. This helped to keep them in contact with the system and to start the process of adaptation to SAP. Project manager noted that starting training too early might be a problem because some users tend to forget what they learn, what implies continuous refreshment training courses. On the other hand, late training will bring problems to go-live phase and extra effort for team members. The optimal solution seems to be training just before the period when they start using the system, and to use a SAP parameterization as close as possible to the final one since this provides a better and quick adaptation to what users will have to deal with after go-live phase. The training process must be seen as continuum, something that will not finish after the go-live. Nowadays, PhotoPics pays special attention to this aspect. One thing that failed in the training plan was new or changed business domain training, i.e., training that addresses aspects such as what is a production request, a production confirmation sheet, what is process integration, process workflow and so on. The lack of such training affected organizational change. The project manager admits that an ERP training plan must be a mix of technical and organizational training.

Project monitoring and control - Project monitoring and control mainly consisted on verifying the accomplishment of the project plan and schedule. With no goals defined at the beginning and with the lack of experience in project management, there were no project metrics being used. However, project meetings were used to continuously monitoring and controlling the project. There were weekly meetings with project team and monthly meetings with top managers. At the end of each phase there was a meeting with all managers. The estimated duration of the project plan was not achieved but all the scheduled tasks were performed.

4.6 Consequences

Business process reengineering - Although the reengineering of business processes started in the gap analysis its effective change occurred in the go-live phase. Parallel to the implementation of the SAP system, managers started changing the business processes in the organization and explaining it to the organization. The project team admits that this should have been done before the implementation since some processes were totally obsolete or inadequate. The reengineering process is not finished yet. Nowadays, during the post-implementation period and using the knowledge that project team has at the present, they are always improving processes by extending processes functionality through the current discovery of functionality in the SAP system. The SAP system brought in new business processes and helped in the reengineering of the old ones. This included the adoption of SAP best practices. As the project manager mentioned, PhotoPics is a manufacturing organization with no unique processes. Therefore, they would not loose competitiveness by adopting SAP best practices. On the contrary, the adoption of practices that SAP provides helped to reengineer the existent business processes and simplified implementation and future maintenance efforts.

Change of mentality - One of the most interesting consequences of this SAP implementation was the induced change of mentality. From the beginning, most of the users disagreed with the implementation of the system but their attitude reversed progressively after the go-live phase. Nowadays, they recognize that SAP is useful and improved the business and they think that more business analysis should still be done, with managers demanding more people to improve the work. The main reasons for the changeover were: top management commitment, the continuous training and the support of team members. Some users were moved from their old functions while others had intensive training. Now, only a few employees are still not using the system. Some of them were middle managers that, due to their age and education, had difficulties to adapt to the new system. The

solution was to train some subordinates of these middle managers that would then help them in the tasks that demand the use of SAP. Nowadays, users are no longer afraid of changes. They have continuous training and they are aware that the system is something about continuous improvement process. Therefore, they feel the need continuous learning and evolution.

Keep team members - In relation to project team, the young graduates were incorporated into the organization with substantial increase of salaries. This helped to keep and improve the SAP knowledge in the organization and avoid dependency on consultants. A continuous learning process was developed with continuous training in SAP in order to improve SAP internal knowledge.

5. ANALYSIS FROM A NATIONAL CULTURAL PERSPECTIVE

After we created the ERP implementation model, we decided to try understanding better the organizational context of PhotoPics. Based on Geert Hofstede's study of national cultures and organizations (Hofstede 1991) we analyzed the findings of PhotoPics case study from three dimensions: power distance, uncertainty avoidance and individualism-collectivism. They are described by Hosftede (1991) as follows:

?   **Power distance** - Power distance is the degree to which members of a society accept as legitimate that power in institutions and organizations is unequally distributed (Hofstede 1991). Higher power distance scores indicate an order of inequality, special privileges for those of higher status, superiors consider subordinates as a different kind of person. In the business world, managers in high power distance cultures are likely to prefer an autocratic or directive decision-making style, whereas subordinates in these cultures expect and want to be closed supervised.

?   **Uncertainty avoidance** - Uncertainty avoidance is the degree to which members of a society feel uncomfortable with uncertainty and ambiguity, which leads them to support beliefs that promise certainty and to maintain institutions that protect conformity (Hofstede 1991). The adoption of an ERP system is considered an innovation. Therefore, its adoption and implementation are preceded by a lot of uncertainty.

?   **Individualism/Collectivism** - Individualism/Collectivism is a preference of closed social societies in which it is understood that individuals must care for themselves and only their closest relations as opposed to a dependence on groups of which individuals form part (Hofstede 1991). Hofstede proposes a single dimensional structure called individualism-collectivism, where those cultures that emphasize the autonomy of the person are grouped under individualism, while those cultures whose most important values place emphasis on the dependency of the individual with respect to groups are clustered under collectivism.

Portugal	Score	Mean
Power distance	63	52
Uncertainty avoidance	104	64
Individualism/Collectivism	27	51

Table 1 - Cultural factors suggested by Hofstede (1991) for Portugal.

Next, we discuss we relate each dimension with the Photopics SAP implementation project.

5.1 Power Distance

The score of Portugal is 63 (mean 51), which means that Portugal has a high power distance score. The political and culture issues emerged as important factors in the organizational environment in our case study of PhotoPics (see context section above). In this case, we emphasize the issue of losing

organizational power and influence. Most of these managers had a large career within the organization and they controlled their departments with authority like 'feuds' as one of the interviewees mentioned. Each department director filtered the information for the organization owner and the one shared among managers. Conflicts among senior managers arose as they tried to dominate and impose their view in the SAP project, since most of them were aware that the results of the SAP project could influence their future career. Since managers were not happy with the project, they passed the negative image to their subordinates, which caused more general disagreement with the project.

5.2 Uncertainty Avoidance

According to Hofstede (1991), the Portuguese society has a high level of uncertainty avoidance ('what is different is danger'), scored 104 (mean 64) combined with collectivism dimension (see below). Hofstede (1991) refers that these types of societies have the tendency to eliminate conflicts inter-groups either by negating minorities, refusing them or assimilating them. Therefore, the risk of confrontation between groups is high since minorities also have a high level of uncertainty avoidance and collectivism (see bellow). In the case of PhotoPics the uncertainty was very high during the whole project. Uncertainty was mainly due to the people being afraid of losing power (top and middle management) and lower levels, where people were afraid of losing their jobs because of organization bankruptcy or the decision to reduce the number of employees. This uncertainty made some managers express their disagreement during the project and some of them difficulting the process by omitting some information, lack of participation in some implementation tasks, no appearance in some important meetings, and decision-making delays in order to delay the whole ERP project.

5.3 Individualism-Collectivism

According to Hofstede (1991), Portuguese society is a collectivist society. PhotoPics workers had been doing their tasks in the same way during many years and they were not happy in changing the way of working. One of the reasons for this disappointment was their age, most of the employees were over 50 with more than 20 years working at PhotoPics. Some of them were also expecting retirement (the legal age is 65 years). The work relationships were in some sense like being part of a family. Hofstede (1991) states for this case that the relationship between owner and employee is viewed in a moral perspective, and is like a familiar relationship were both have obligations: protection in exchange of loyalty. Most of the employees of PhotoPics doubted about the real intentions from top management with the introduction of this new expensive SAP system. There was a notorious lost of trust on their managers what made that most employees started showing indifference to the SAP project.

6. CONCLUSIONS AND IMPLICATIONS FOR FURTHER RESEARCH

We think that the main conclusion of this study is the evidence that organizational, cultural and national issues have a strong impact in ERP implementation projects. In the particular case addressed in this study if those organizational and cultural issues were had been taken into account during the planning phase, it is very likely that some problems would have been avoided or mitigated during the ERP implementation project.

We think that the identification and understanding of organizational, cultural and national issues in ERP implementations can be a step forward in current research on the ERP field that leads to the creation of theoretical knowledge that can contribute to project failures. The findings of this case study should be validated with additional studies. We think that organization and innovation theory

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can also be able of providing more insights on the topic. Furthermore, it would be also interesting to analyze the relationships among the organizational issues identified in this case study.

Skok and Doringer (2000) pointed out the need to study the relevance of macro and micro-level cultural issues in the successful operation of ERP systems focusing on the function versus process view of ERPs. Our findings suggest that the relevance of these studies goes beyond the use of ERPs. The analysis of Hofstede's dimensions in our case study suggests that these dimensions could be helpful in addressing some ERP project issues and, consequently, to define a strategy for ERP implementation. For instance, one of the main issues in ERP implementation projects is the project duration which is often used as one of the ERP project success evaluation indicators. Kale (2000) evidences the impact of cultural readiness on ERP project duration, which supports our preliminary findings. These findings can also help in defining the determinants of Critical Success Factors (CSFs) for ERP projects (Esteves and Pastor 2000). Research on CSFs identification does not provide the reason why some CSFs are more relevant in some organizations than others. Further research on this topic is needed in order to validate the relationships between these dimensions and ERP implementation success. In this study we analyzed Hofstede's dimensions one by one. Future research should also consider the influence of associations of dimensions like power distance/uncertainty avoidance and uncertainty avoidance/individualism effects. The literature on IS evidences a lack of research on corporate and national culture. The influence of culture has mainly been focused in the IS solution and how it fits with the organizational culture, or the cultural changes.

Another aspect to consider is whether ERP systems implementation significantly differ from the implementation of other types of systems either currently (e.g., in implementation projects of emerging IS such as data warehousing, data mining, knowledge management systems) or in the past. This research path can bring up conclusions regarding the specificity of ERP implementation projects or the identification of general trends in IS implementation. Our study focused on how national culture may influence ERP implementation projects from an implementation process perspective. We think that the findings of this study are not unique to ERP implementation projects and they can also apply to other IS types, or even in software developments projects.

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