ERP SYSTEMS IN THE HOSPITALITY INDUSTRY: VALUE CREATION AND CRITICAL SUCCESS FACTORS

SISTEMAS DE ERP NA INDÚSTRIA HOTELEIRA: VALOR CRIAÇÃO E FATORES CRÍTICOS DE SUCESSO

SISTEMAS ERP EN LA INDUSTRIA DE LA HOSPITALIDAD: CREACIÓN Y FACTORES CRÍTICOS DE ÉXITO

Paula Serdeira Azevedo (pscorreia@ualg.pt)*
Carlos Azevedo (cmazevedo@ualg.pt)**
Mário Romão (mario.romao@iscte.pt)***

ABSTRACT:

The purpose of this paper is to highlight factors that may be considered critical to the successful use of the ERP (Enterprise Resource Planning) systems in the hospitality industry, in particular those that seem to be limiting a broader usage of these systems in this industry. The paper also contributes to the understanding of how ERP systems may create value to these industry businesses. This is done through a reference model, providing the framework to understand how the current vendor’s offer fits into the business needs of this industry.

Keywords: Information Systems, Enterprise Resource Planning (ERP), Information Integration, Hospitality Industry.

RESUMO:

Os objetivos deste artigo são, por um lado, evidenciar os fatores considerados críticos para o sucesso da utilização dos sistemas do tipo ERP (Enterprise Resource Planning) na indústria hoteleira, evidenciando os que parecem estar a limitar o uso mais abrangente e integrado destes sistemas na indústria referida. Por outro lado, pretende-se com este artigo, através de um enquadramento referencial, perceber como os Sistemas ERP podem gerar mais valor para o negócio da indústria hoteleira, evidenciando como a oferta atual dos principais fornecedores de soluções tecnológicas se adequa às necessidades funcionais da indústria.

Palavras-Chave: Sistemas de Informação, Sistemas ERP, Integração da Informação, Indústria Hoteleira.
RESUMEN:

Los objetivos de este artículo son, por un lado, poner de relieve los factores considerados críticos para el éxito de la utilización de sistemas como Enterprise Resource Planning (ERP) en la industria hotelera, destacando aquellos que parecen estar limitando el uso más amplio e integrado de estos sistemas en la industria. Por otro lado, se pretende con este artículo, a través de un marco referencial, percibir cómo los sistemas ERP pueden generar más valor para el negocio de la industria hotelera, mostrando cómo la actual oferta de los principales proveedores de soluciones tecnológicas adecuadas para los requisitos funcionales de la industria.

Palabras-Clave: Integración de sistemas, sistemas ERP, información de la información, la industria hotelera.

* Paula Serdeira Azevedo. Holds a PhD in Management Sciences by University of the Algarve, with an investigation in the area of Information Systems. She is a Professor at the University of the Algarve since 1997. She published several papers in international congresses and seminars. She is co-author of a book.

** Carlos Azevedo. Holds a MSc in Economics by the Technical University of Lisbon, complemented with several training courses on Financial Management by the Catholic University of Lisbon. He holds the degree of Specialist. He is an Assistant Professor at the University of the Algarve. He held several positions as a manager in GALP and REN Portugal.

***Mário Romão. Is Professor of Information Systems at ISCTE - IUL Institute University of Lisbon. He holds a PhD in Management Sciences by ISCTE-IUL and the Computer Integrated Manufacturing (Cranfield University). He accomplished an international certification in Project Management - PMP Best Practitioner Program by PMI.
1. INTRODUCTION

ERP systems emerged as a tool to automate and add efficiency to repetitive business processes, providing managers with a global vision and timely responses to the ongoing business operations, and at the same time solving information fragmentation and disintegration problems.

These problems are felt in the hospitality industry just as much as in any other industry.

Implementing an ERP system may imply deep modifications in structure, business processes and even the culture of an organization. Despite some drawbacks, the benefits of these kind of IS/IT systems are numerous and may bring important contributes to increase business competitiveness. In order to achieve the expected benefits there are some critical success factors that have to be closely looked at.

The purpose of this paper and the underlying research is to identify the major success factors when using this kind of systems in the hospitality industry, as well as factors that may prevent organizations from using them. In order to achieve this, a reference model was accomplished, based on EAP (Enterprise Architecture Planning) reference framework, enabling a better understanding of how ERP systems create value to the hospitality industry, and at the same time providing basis to understand how the current vendor’s offer fits into the business needs of this industry.

2. ERP SYSTEMS IN THE HOSPITALITY INDUSTRY

Changes made possible by technology originated different ways to operate business in the hospitality industry. The huge amount of data and the speed on which it must be processed is crucial to succeed. Therefore IS/IT (Information systems based on information technology) used in this industry must provide flexibility and efficiency, allowing to meet customers’ needs (Beldona et al., 2001).

In this industry, ERP systems should be able to work out the problem of information fragmentation, integrating all data in a unique database serving the whole organization and connecting all processes in real time. Any change or action on a given process should have immediate impact on all related information, allowing for a holistic view of
the organization at a given moment (Davenport, 2000; Alshawi et al., 2004).

ERP Systems emerged as a tool to automate repetitive tasks and to provide managers with a global and real time vision of all operations, solving the problem of information disintegration and fragmentation (Muscateillo e Chen, 2008). This problem is felt in other industries as well, but in the hospitality industry it is particularly relevant, because of the diversity of applications and specific systems for various processes. The predominance of legacy systems, difficult to maintain and mostly incompatible, makes even harder the task of systems updating (Beldona et al., 2001; e-Business W@tch, 2006).

ERP systems have modules that integrate data in a single database and with a single interface. However different industries have different needs. Therefore ERP vendors have been developing specific modules, embedded in their ERP system, for specific processes in a particular industry (Heart et al., 2001; Panorama Consulting Group, 2009).

According to Worcester, referenced by Heart, the major problem in hospitality management is data disintegration, scattered through several databases, making a hard task to produce reports with consolidated information (Heart et al., 2001).

Until recently major ERP vendors did not pay much attention to this industry (Martínez et al., 2006). In the past this gap was associated with particular aspects and dimension of the industry, dominated by small or medium size companies. The strategy of those vendors was to develop ERP systems for large companies with complex IS, difficult to build in-house and not covering the market of small and medium size companies (Beldona et al., 2001).

However, presently ERP vendors are increasingly selling simplified systems for small and medium size companies, although in the case of hospitality industry they don’t integrate the various business areas and processes. An exception was SAP who developed a specific front office module for this industry (SIMHOTEL), integrated in the SAP offer, but it was recently sold to another vendor.

In order to sort out the absence of a single integrated solution some vendors are developing integration tools for major ERP systems (Martínez et al., 2006). Specifically in what the hospitality industry is concerned, major ERP vendors have oriented their market strategies to the coverage of back office processes, which are normally similar no matter what industry we consider. International chain hotels, for instance, adopted ERP systems traditionally used in other industries.
SAP is market leader, as in other industries, in particular in larger hotel units (Panorama Consulting Group, 2009). The industry’s specific processes, like front office, booking, stocks, F&B or POS (Point of Sales) are covered by specific solutions, often not integrated with back office processes and the implemented ERP system (Heart et al., 2001).

Studies related with application integration among several modules of hotel units indicate that normally they are acquired to different vendors. Non integration of data makes difficult, among other aspects, the use of data analysis applications such as data warehouse, affecting forecast and decision support (Heart et al., 2001).

According to FORTE, a publication referenced by Heart, 1997, there wasn’t a single application integrating all business processes of a hotel unit. On average 19 applications would be required to cover all business processes (Heart et al., 2001). In a study made on the hospitality industry in Israel, Heart concluded that 97% of the units were computerized, including those with less than 50 rooms. Most common front office applications were booking and front-desk and the most common back office application was accounting (Heart et al., 2001).

On the same study, Heart evidenced the absence of ERP systems oriented to the hospitality industry in Israel, and this fact forces organizations to buy other applications to other software vendors. The study also concluded for the absence of integrated applications, sharing a single database. These applications mostly run on different platforms and under different operating systems, limiting the access to quality and consolidated information suitable for decision making. Diversified applications from several vendors increases the complexity of maintenance and updating (Heart et al., 2001).

On the hotel units observed by Heart, two applications, from vendors Rotstein and Silverbyte cover 55% of PMS (Property Management System) front office applications, without offering however a true integrated solution, as they don’t share the same database (Heart et al., 2001).

Another study on IS/IT in this industry identified the following PMS, among the most popular: Fidelio (24,24%), Hostware (24,24%) and Medallion (18%) (Rus, 2009). This study shows a limited number of organizations having integrated solutions such as ERP systems. The majority didn’t have solutions integrating the already implemented systems (Rus, 2009).

Besides the foreseen integration between back office and front office processes, ERP systems may be used in a more strategic way, as they allow connectivity among organizations, such as tourist
operators and travel agencies, linking all value chains through systems like SCM - Supply Chain Management (e-Business W@tch, 2006).

The problem of application integration is more and more relevant, regardless what the industry is, forcing organizations to turn to specific technologies for scattered and distinct application integration (Heart et al., 2001).

3. USING ERP SYSTEMS IN THE HOSPITALITY INDUSTRY: SUCCESS FACTORS AND LIMITATION

The hospitality industry has deeply changed throughout recent years and information technology has played a nuclear role in it (Ribalaygua, 2000). This industry has in IS/IT potential to improve its competitive positioning. It is important to use new technology to “reinvent” external and internal processes, ensuring productivity gains and customer satisfaction (Miguel et al. 2000). Other authors point out the need of the organization to promptly respond to new customer demands in what quality of service is concerned, implying a strategic use of IS/IT (Zomoza (1995), (Kirk e Pine 1998), (Martinez et al. 2006).

The relationship with external operators through new distribution channels is another critical success factor (CSF) of this business and may bring important benefits using IS/IT (Miguel et al. (2000).

Diversifying service offer is also considered another CSF of the hospitality industry (Ribalaygua 2000). This author refers services like entertainment, health centers and golf courses as a differentiation factor towards competitors.

Identifying major CSF’s using ERP systems as well as the major limitations when implementing these systems, was the purpose of a case study covering an important group of companies in the portuguese hospitality industry. To the investigators it was relevant to know in which way the group considered and attended to CSF’s, as the literature review revealed. It was also important to know their strategy in the industry they operate, as well as which CSF’s were considered activity specific by the group.

Investigation followed an interpretivist approach and mostly qualitative. Facing the questions to investigate, an approach of interpretation and understanding of facts was adopted, inserting the investigators in the organizational context of the hotel units belonging to the group. This approach allowed for a group of professionals, among
managers, users and IS/IT directors, to express, conceptualize and evaluate the objectives stated by the investigation.

The investigation method adopted combines several techniques, such as semi-structured interviews to the group’s CEO, the IS/IT director, as well as IS/IT people responsible for logistics, human resources and financial systems support and implementation. This approach did emphasize inefficiencies or inconsistencies in the information used and facilitated the analysis of relevant processes.

The interviews with key people of the organization were a way to ensure a solid vision of who is inserted in the organization and allowed a quick knowledge of the materials being collected and analysed. An inquiry by questionnaire was launched to the 66 key users identified. The respondents correspond to IS users, having responsibilities in each department of each hotel unit, and this profile had the objective of understanding the level of user satisfaction towards the IS/IT implemented, allowing for questionnaire’s data validation when crossed with interviews and documents collected. In other words, the process was complemented either by documental analysis of collected data on hotel units or by direct observation of real applications running. The solutions offered by major ERP vendors were identified, in order to assess available applications and their functional coverage in the hospitality industry. An expert panel with competences in IS/IT areas was invited to express suggestions and alternatives for the case study analysis.

The interviews revealed that the group’s strategy stands, among other aspects, on quality and diversification of commercial offer, namely through complementary business areas (golf and health centres). This confirmed what authors like Ribalaygua (2000) and Connoly et al. (1998) underline about service offer diversification as a factor of differentiation.

Given the stated strategy, the top management was questioned, through interviews included in the case study, about eventual competitive advantages associated with the use of IS/IT and its potential effect on the performance of business processes. According to the opinions expressed, there were no competitive advantages resulting from its use in the organization, and found it a secondary factor compared with other advantages such as brand recognition or quality and location of hotel units. Moreover, and also according to the respondents, the group did not perceive any risk on losing market share or sustainability because they found IS/IT as essentially a support to business processes.
According to Ward et al. (2008), this perception that investment in IS/IT as not strategic reduces capacity in achieving benefits from its use. Other authors refer that strategic use of IS/IT is mandatory and even inevitable as a reliable way of responding to global business demands (Miguel et al. 2000), (Ribalaygua 2000).

4. REFERENCE FRAMEWORK

Another objective of the investigation was to understand how ERP systems could create value to the business. This was supported by a reference framework for IS/IT adoption and usage that included, among other items, an assessment on how current vendor’s technological offer was suitable to the business needs of the hospitality industry.

Organizations must continuously check if business is aligned with external environment, in order to sustain changes in appropriate and, if possible, integrated IS/IT systems (Davenport, 2000). Nevertheless, investments in IS/IT should be managed like any other, efficiently and effectively for business sustainability in the medium and long range (Davenport, 2000). Some authors refer that only 30% of IS/IT investment projects achieve the expected benefits (Ward et al., 2008), and that is one reason to have a reference model of good practices to help minimize this risk.

The reference model presented on figure 1 is based on the EAP (Enterprise Application Planning) framework and is also inspired on other academic or market proposals found relevant to the objectives of the investigation. It consists of blocks representing actions to be followed by top and IS/IT managers, supported by relevant tools. In general those actions are the following:

I - Diagnose – Identify business needs, based on EAP framework.

II - Manage – Application portfolio management is based on the methodology developed by J. Ward (Ward et al., 1990; Ward et al., 2008).

III - Select/Decide – The methodology for selecting service providers is presented according to a conjugated criterion of several authors. The basic requirements for the hospitality industry follows from data collected during the investigation.
IV - Plan – This block refers to a set of good practices mentioned by several authors and should be taken in consideration in any IS/IT implementation project.

V - Mobilize – The model introduces relevant concepts for project team building, either in analysis and design or implementation and evaluation.

VI - Manage/Run – The model also introduces some proposals by ERP software vendors, namely SAP Best Practices, a framework that includes software oriented for application prototype developed or under development on SAP ERP Systems. From the same vendor SAP Blueprint, a base structure to support SAP ERP projects, was consulted.

Figure 1 - Reference Model for IS/IT adoption and usage

This model is a contribution for present or future IS/IT diagnosis, in particular in relation to the ERP systems of the studied group. This is a relevant contribution to the hotel group as it is a tool to be used strategically, something the group didn’t have. Given the current as well as future business dynamics, the model may be used as a tool to assess IS/IT alignment, and as such provide support for better strategic planning.
The model had the contribution of the expert panel that followed the investigation, having validated it, namely through testing real situations recommending the use of the model.

5. DISCUSSION

The representation of the value chain’s processes in the hospitality industry (Figure 2) is presented as bases for discussion on how may ERP systems add value to this industry. Furthermore it allows a better understanding of the functional requirements that should be in the portfolio of the software vendors, requirements that must support the industry’s CSFs.

Processes are divided in support and business processes, the latest being the processes that add value to the activity of the organization.

![Figure 2 - Value chain’s processes in the hospitality industry](image)

The investigation confirmed that the offer of ERP software having high level of integration is almost all oriented towards support
processes, the ones with reduced impact on core business. Moreover, it also confirmed that the hospitality industry adopts ERP solutions common to the majority of industries.

The offer for ERP systems covering business processes that are typical to the industry doesn’t embed the same levels of integration as those covering support processes, as stated above. The vendor’s offer is mostly oriented for front office processes, through PMS software. PMS means Property Management Systems, software solutions covering some business processes common to the hospitality industry, providing interfaces for back office processes (financial, provisioning, etc.), including centralized and hierarchized data (customers, guests, etc.), allowing for central or local management.

According to some authors, the generalization of functions is a limiting factor of ERP systems, forcing some organizations to implement other application software as well. However, an increasing number of ERP vendors are incorporating in their offer core software modules for specific industries (Lee et al., 2003). For this reason, the need to cover business processes by different application software tends to decrease.

It is also important to relate value chain’s processes in the hospitality industry (Figure 2) with their respective CSF’s, as mentioned on item 1 of this paper. The CSF’s can be summarized as follows:

- Process performance improvement;
- Quality of service;
- Relationship with external operators;
- Service diversification.

How can IS/IT respond to these CSF’s?

Support processes presented on Figure 2, corresponding basically to ERP software, are crucial on process performance improvement and on quality of service. Business processes covered by specific front office application software tend to respond to CSF’s relationship with external operators and service diversification. The latest also applies to complementary businesses.

6. CONCLUSIONS

ERP systems emerged as management systems to enable resource management in an integrated way, automating most activities or processes of several departments of the organization, in order to process information in real time. This concept implies the idea of
systems oriented to the organization as a whole, that is, a holistic view of all organizational units. In the literature review this was the theoretical perspective the investigation found on consulted authors (Ross e Vitale 2000), (Nahar 2006), (Davenport 2000). However, it was also found that, no matter all the benefits achieved with the implementation of this type of systems, they don’t cover all processes of all industries. Many organizations realized during ERP implementation that several processes or department tasks were not covered, and so they were forced to implement specific application software to fill the gap (Markus et al. 2000), (Themistocleous et al. 2001).

Another objective of the investigation was to identify limitations of ERP systems in the hospitality industry. This was done by analysing a hotel group of companies in order to understand how could this industry solve the problem of information integration of the several installed application software, as well as the processes covered by the ERP systems. A reference model for IS/IT adoption and usage was also designed from literature review and industry best practices, and validated by an expert panel. As a partial result of the research this framework was considered appropriate for ERP systems management in organizations of the hospitality industry.

It was found that the lack of data integration in the areas of complementary businesses (golf, health centres, SPA) had consequences in the quality of service offered to the customer. As there was no integration among data generated in these areas during customer stay in the hotel units, the current account wasn’t updated online and so the final invoice wasn’t always promptly ready at check-out. This situation affected one CSF elected as such by the hotel group: quality of service offered to the customer.

It was also found that the absence of integration between the front office system and major tourism operators, like Booking, Expedia or others, affects another CSF: process performance improvement. As these processes are not integrated, its effectiveness is concluded manually, by human hand, using traditional tools like fax or e-mail. So, it can be concluded that besides inefficiency and time duplication to finish the tasks inherent to the processes, the hotel group was not taken advantage of one important potential of IS/IT in this industry: incorporate the value chain processes into an integrated information system, as underlined by authors like (Ribalaygua 2000), (Kirk e Pine 1998) and (Connoly et al. 1998).

The impact of insufficient integration or none at all, reflects on loss of competitiveness as a direct result of incapacity on reducing
execution time in certain processes. The consequent manual intervention may originate data redundancy and inconsistencies. Furthermore it was found that these constraints turn information retrieval on company performance and management, more difficult and inaccurate.

Other authors obtained similar results in their investigation (Zornoza 1995), (Martínez et al. 2006). Poor data integration reduces the ability of the organization to relate with other business partners, as inter organizational integration is also unattained and thus not taken advantage of capacities induced by the internet and other technologies. A similar perspective was found in authors like Ribalaygua (2000), Kirk e Pine (1998).

As for the question of understanding how can ERP systems create value to the hospitality industry, and according to Heart et al. (2001) and consultants Panorama Consulting Group (2009), the major ERP vendors have oriented their efforts to back office processes, for these processes in this industry are very much the same as in other industries. Hotel units of large dimension adopt, as a rule, ERP systems traditionally implemented in other industries.

In what core business processes are concerned, basically front office, like booking, provisioning, food & beverages or POS (point of sales), the hospitality industry normally adopts specific solutions, often from vendors who don’t provide integration with back office and the ERP system implemented.

Therefore, the importance CSF’s have on decisions over ERP systems implementation in the hospitality industry must be emphasized, either on what processes should these systems cover, or on what level of integration should be attained.

REFERENCES