

**Information System Operational Alignment: an alternative towards service quality improvement in the hospitality industry**

*Alinhamento operacional de Sistemas de Informação: uma alternativa para a melhoria dos serviços prestados pelo setor hoteleiro*

*Alineación operacional de los Sistemas de Información: una alternativa para mejora de la calidad de los servicios de la industria hotelera*

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**Abstract**

Since the twentieth century, a transformation has begun through two new techniques from information age: information technology (IT) and business process redesign. Considering this context, aiming to make the relationship between business process and IT tangible, this paper verifies this relationship in the hospitality industry, which is in evidence due to mega events that Brazil will receive in the next years. To conduct this research, we mapped all business processes from the case studied; analyzed the support offered by the adopted information technology (IT) to the processes; verify the alignment between business processes and information system (IS) adopted and; verify users satisfaction with the utilized IS. The study is qualitative and descriptive, and the investigation method is a single case study in a hotel located in the central region of Rio Grande do Sul (RS). For the data and information collection, we used the non-participant observation and lastly, we applied a satisfaction survey with IS users. As results, we obtained the business processes mapping from the organization, the interrelationships among them and the IS adopted. We concluded that processes are aligned with IT used, since IT support the business processes. Also, we found that IS users are satisfied with the system adopted and understand that it is important for the organization performance.

**Keywords:** Hotels; Business Processes; Information Systems.

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## Resumo

*Desde o Século XX, uma transformação foi iniciada por meio de duas novas técnicas da era da informação: a tecnologia da informação (TI) e o redesenho de processos de negócio. Considerando esse contexto, buscando tornar tangível a relação entre processos empresariais e TI, este trabalho tem como objetivo verificar esse relacionamento na indústria hoteleira, a qual está em evidência devido aos megaeventos que o Brasil receberá nos próximos anos. Para isso, buscou-se: mapear todos os processos empresariais da organização unidade de análise; analisar o suporte oferecido aos processos pela tecnologia de informação adotada; verificar o alinhamento entre os processos empresariais e o sistema de informação (SI) adotado e; verificar a satisfação dos usuários com o SI utilizado. O estudo tem caráter qualitativo e natureza descritiva, sendo o método de investigação o estudo de caso único, em um hotel da região central do Estado do Rio Grande do Sul (RS). Para a coleta de dados e informações, utilizou-se da observação não participante e, por fim, aplicou-se uma pesquisa de satisfação com os colaboradores usuários do SI. Como resultados, obteve-se o mapeamento dos processos empresariais da organização, suas inter-relações e o SI adotado. Concluiu-se que os processos estão alinhados com a TI adotada, uma vez que esta é capaz de oferecer suporte àqueles. Ainda, foi constatado que os usuários estão satisfeitos com o SI implantado e entendem que esse sistema é importante no funcionamento da organização.*

**Palavras-chave:** Hotéis; Processos Empresariais; Sistemas de Informação.

## Resumen

*Desde principios del siglo XX, una transformación comenzó con dos nuevas técnicas de la era de la información: tecnología de información (TI) y el rediseño de procesos de negocio. Teniendo en cuenta este contexto, tratando de hacer tangible la relación entre los procesos de negocio y de TI, este artículo tiene por objetivo comprobar esta relación en la industria hotelera, que está en pruebas debido a grandes eventos que Brasil recibirá en los próximos años. Para eso, hemos tratado de: asignar todos los procesos de negocio de la organización unidad de análisis; analizar el apoyo prestado, a los procesos, pela tecnología de información adoptado; verificar la alineación entre los procesos de negocio y el sistema de información (SI) adoptado y; comprobar la satisfacción de los usuarios con el SI utilizado. El estudio es cualitativo y descriptivo y el método de investigación es un estudio de caso único en un hotel de la región central del Rio Grande del Sur (RS). Para la colección de datos y información, se utilizó la observación no participante y, finalmente, aplicar una búsqueda de satisfacción con los usuarios de SI. Como resultados, se obtuvo el mapa de procesos de negocio de la compañía, las interrelaciones entre ellos y el SI adoptado. Se encontró que los procesos están alineados con TI utilizado, ya que es capaz de soportar aquellos. Además, se encontró que los usuarios están satisfechos con el SI implantado y comprenden que el mismo es importante para el funcionamiento de la organización.*

**Palabras clave:** Hoteles; Procesos de Negocio; Sistemas de Información.

## 1. Introduction

Recently, it is possible to see a lot of interest from the private and public sphere, and also from the Brazilian population, in attracting and attending sporting events. This is justified by the opportunity to generate funds for the location, not only those resources caused by the event itself, but also for attracting tourists and the visibility given to the locations that host the event. This is viewed as a convenience to attract the attention of foreign investors (HORNE, 2007; SEIXAS; LOPES, 2012). To Seixas and Lopes (2012), the promotion of mega sporting events has been a strategy of several countries seeking international investments.

Brazil will host two mega sporting events over the next few years, the 2014 FIFA World Cup and the 2016 Olympic Games. Seixas and Lopes (2012) claim that the visibility Brazil will have with the promotion of the mega sporting events mentioned above is undeniable. The economic benefits of these events depict an argument used to justify the effort and public investment to host such events (OHMANN *et al.*, 2006; CARVALHO; ALVES, 2009; DOMINGUES *et al.*, 2010; MONZONI NETO *et al.*, 2011; NEVES *et al.*, 2011; SANTOS, 2011; SEIXAS; LOPES, 2012). In this context, the hotel sector's participation in the discussions on the future actions of the Ministry of Tourism is important for the preparation of the tourism production chain (BRAZIL, 2012).

To promote the events in question, it is necessary to evaluate a long-term demand of local residents and tourists, considering profits for private companies, but also income and additional work, which produce higher tax revenue to the public budget, generating possibilities of financing new projects (OHMANN *et al.*, 2006; DOMINGUES *et al.*, 2010). According to Horne (2007), there are three factors that lead to the growth of the society from mega sporting events: the development of new technologies of mass communication, the interests of large corporations in sponsoring such events and the vision of megaventures as an opportunity to sell, disseminate, promote products of large corporations.

Under the organization scope, the concern is about the services and products offered to customers. There should also be planning and analysis about the demand for products and services. In the early 1990s, two new tools of the information age began a transformation within the companies (DAVENPORT; SHORT, 1990): the Information Technology (IT),

that it comes to the features offered by computers, applications of software, hardware and telecommunications, and the redesign of business processes. Currently, organizations use information technology to organizational innovation in generating ideas, experimentation, marketing and dissemination and implementation of improvements (LINDIC *et al.*, 2011). Thus, Sheth *et al.* (2002) state that it has assumed a strategic role in various sectors.

As for the hotel sector, specifically, the importance of in-depth analyses is highlighted, because these companies have a fundamental role regarding the reception of tourists during the mega sporting events hosted in Brazil, and to the impression caused to these investors through services offered to them. In addition, hotel management can also emerge as an important element in expanded economic development strategies (ESTEVÃO *et al.*, 2009), especially considering the developing countries, where the growth rate of international tourism was greater than 8%, which is higher than the developed countries, where growth was, on average, 5%, showing that emerging economies are experiencing a rapid growth in tourism (JAUHARI; RISHI, 2012).

Considering the data of the Brazilian Institute of Tourism (EMBRATUR), in 2011, with the economy in a positive moment and the planning for the 2014 World Cup in Brazil, the country presents itself in transformation stage for a significant increase in the number of foreign tourists, the information from the Ministry of Tourism indicate an increase from 5 million to 8 million by 2014 (BRASIL, 2011). This overview was also corroborated by Teixeira (2011), the author reports that in Brazil, the development of the tourism sector has been stimulated by those responsible for economic policies because it contributes not only to attract foreign capital, but also for the generation of new direct and indirect jobs.

In order to make a good impression for the host country of the 2014 Cup, the Government, in partnership with EMBRATUR, has created the Hospitality Program (programa Bem Receber Copa). The main axis of action of this program relates to the tourism industry, focused on people, companies and destinations (BRASIL, 2011). Accordingly, IT and process management are seen as strong allies in the creation of new business strategies, new organization structures, new forms of relationship between companies and between companies and their customers. Since the management of business processes and the alignment of these with information technology, which provides support to the processes, are able to allow a better operation of the company focused on the following activities that take the goods and

services to the client (LAURINDO; ROTONDARO, 2006). For Ramos e Rodrigues (2006), the development of information technology has created a significant number of tools for the integration of hotel processes. Such claim is also justified by the study of Sheth *et al.* (2002), which states that IT is increasingly assuming a strategic role in various sectors.

For Davenport and Short (1990), the importance of the connection between IT and redesign of business processes is well known among engineers, although these tools are still being used separately. The same authors conceptualize IT as the representation of processes through management softwares. In this sense, Nolan (1979) states that the integration between IT and Management Processes in business activities is the final stage of the evolution of the use of information technologies.

In the search for making the relationship tangible between business processes and information technology (TI), this article aims to explore the relationship between business processes and the adopted IT, taking as the direction the existing theory on the subject, through a unique case study in a hotel in the central region of the State of Rio Grande do Sul (RS). To this end, the following specific objectives that indicated the accomplishment of this work were developed: (i) mapping all processes of the company that served with an analysis unit; (ii) analyze the support offered by the Information Technology adopted by the analysis unit; (iii) check the alignment between business processes and information system adopted, and; (iv) verify the users' satisfaction with the information system adopted.

Based on the above, this study is justified by enabling a better understanding of the factors that facilitate and/or limit the alignment between business processes and information technology adopted, besides contributing to the theorization on the subject, since there are very few studies in this field. To achieve the proposed objective, the concept of information technology will be maintained as a management tool which includes, in addition to the technological resources of hardware and software, the Information System (IS) adopted (WARD; PEPPARD, 2002; O'BRIEN, 2010). As a IS concept, the process proposed by Turban *et al.* (2007) was used, that understands an information system as a computer-based system that collects, processes, stores, analyses and disseminates information in order to generate knowledge to solve organizational problems.

The work is structured in the following way, after this introduction: in section 2, the reference that provided the theoretical foundation required for the study can be found. Then

(section 3), the methodological procedures that enable the performance of the work. Finally, in sections 4 and 5, respectively, the results obtained from the observations are described, as well as satisfaction survey with IS users of the analysis unit, and the conclusions found from the work, identifying the alignment between the constructs considered (business processes and IS), verifying the convergence of the study with the current literature on the subject and the limitations and future opportunities emerged after the end of this investigation.

## **2. Theoretical Framework**

### **2.1. Business processes and the redesign of organizational processes**

Processes are defined as a systematic series of actions directed to the achievement of a goal (JURAN, 1995). Another process definition made by Campos (1999), which stresses the idea of successive and/or parallels operations which provide a result, usually as part of a global production cycle of a product or a service. For Laurindo and Rotondaro (2006), process is only the way in which an activity is developed.

According to Davenport and Short (1990), the classification of processes depends on three major dimensions: type of organization, type of objects handled and kind of activity performed during the process. The types of processes are within these sets. As for the organization dimension, the processes can be cross-functional, cross-organizational and departmental; regarding the objects dimension, the types: manufacture and services, and; as regards the activities: operational and management. Figure 1 shows the relationships between the dimensions and types of processes.



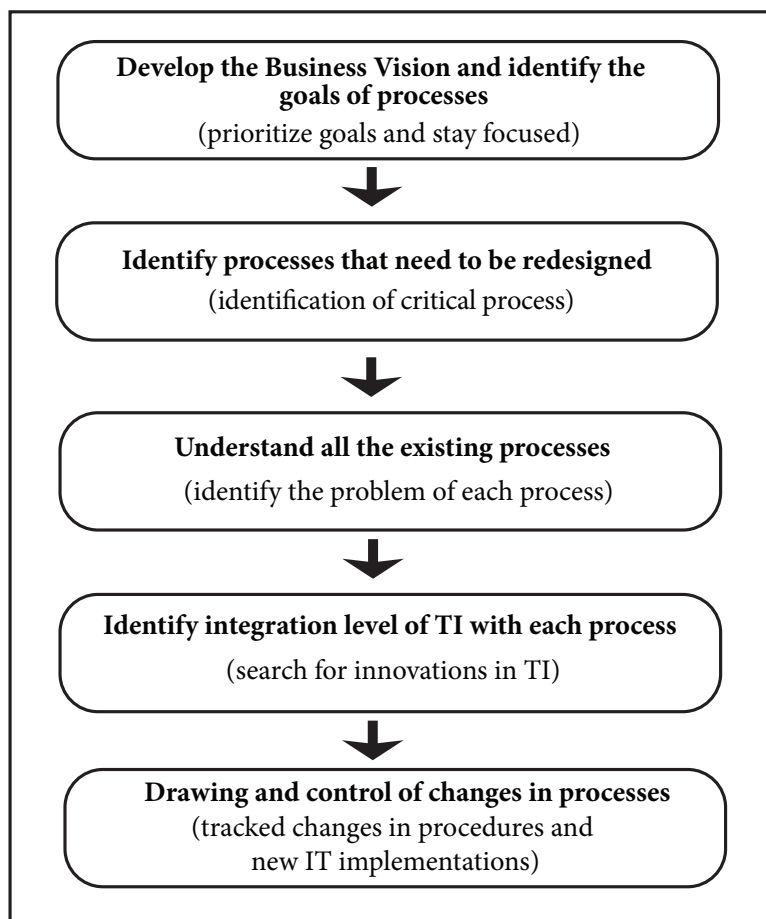
Dimensions of Processes	Types of Processes
Organizations	<ul style="list-style-type: none"> <li>• Cross-organizational;</li> <li>• Cross-functional;</li> <li>• Departamental.</li> </ul>
Objects	<ul style="list-style-type: none"> <li>• Manufacture;</li> <li>• Services.</li> </ul>
Type of Activities	<ul style="list-style-type: none"> <li>• Operational;</li> <li>• Management.</li> </ul>

**Figure 1** – Relationship between dimensions and types of processes

Source: DAVENPORT; SHORT, 1990, pg.15

Coutinho and Chagas (2009) point out that in the administration of services, processes are performed interactively with the customer and that is why it is necessary to drill through the entire sequence of operation. It is required to understand the functioning of the visible part of the operations, but without forgetting that the invisible part acts as a support to operations.

According to Davenport and Short (1990), if the company finds that there is a need to redesign its processes, the redesign is developed in five stages: the development of the business goals and processes, the identification of processes to be redesigned, the understanding of existing processes, the identification of the integration level of Information Technology with each process, and then, the redesign of each process. Figure 2 shows the five steps of the redesign of business processes.



**Figure 2** – Five steps of the redesign of business processes  
(adapted from Davenport and Short, 1990, pg. 06)

Process optimization technique, which can also be called as *Business Process Redesign* (BPR), carries out interference in the processes, causing planned changes and controlled results, whose purpose is to observe changes and their respective effects (JURAN, 1995). The purpose of the application of this methodology are activities with time and minimized costs and with maintenance and reliability (CASTELLI, 2003).

**2.2. Information Technology in the Hotel Industry**

The hotel enterprises play a major role in tourism-related business (GOHR; SANTOS, 2010). With the growing demand for information from customers and industry experts, the hotels have adopted information technology-based systems to improve operational efficiency,





reduce costs and increase the quality of services (VAN HOOFF *et al.*, 1996; SIGUAW; ENZ, 1999; CAMISON, 2000; COBANOGLU *et al.*, 2001).

According to Turban *et al.* (2007), information systems (IT) are integral features of each functional area. For Ward and Peppard (2002) and O'Brien (2010), an Information System (SI) is an organized set of people, hardware, software, communication networks and resources for collection, processing and dissemination of information in an organization. These interconnected components, transform data resources in information products.

The use of IT facilitates organizations, especially those in the hotel industry, the following: segmenting their customers the moment they fill in the entries; apply differentiated fees; provide instant information; customize the service upon the reservation, check-in, during the stay, and upon the check-out (ROSEN; HOWARD, 2000; YELKUR; DACOSTA, 2001; CARVELL; QUAN, 2008). Thus, the satisfied customer tends to enlarge his frequency and, finally, he becomes loyal to the company (KANDAMPULLY; SUHARTANTO, 2000).

Thus, with the use of IT in business, hotels managers expect their profit margins and financial returns to grow (LAW; JOGARATNAM, 2005). The IT investment, thereby, benefits the hotel if it allows the offer of a better experience to the customers, and makes the team to work more efficiently to better serve customers. So, managers and entrepreneurs want, in addition to language skills and hotel business skills, in general, to obtain knowledge in data processing (WATKINS, 1995; TEIXEIRA, 2011), aiming at a better use of TI in business.

In general, the hotel industry is considered of intense information, because it deals with a high amount of documents, resources and expertise into its routine. Davis and Davidson (1991) mention that with IT reformulating the basic structure of the sector and society as well as the customers' needs for faster and clearer information, the speed of technological diffusion in hotels will grow considerably. For this, it is necessary to keep interaction with customers, employees properly prepared, nimble and flexible processes, as well as quality services, so that the hotel industry has greater competitive advantage and productivity (LIMA FILHO *et al.*, 2012).

This panorama can be potentiated in Brazilian territory, since mega sporting events as the upcoming FIFA World Cup (2014) and the Olympics (2016) will take place in the country. And, according to Seixas and Lopes (2012), organizers of mega sporting events like these, stimulate domestic businesses (restaurants, hotels, commerce and service providers), which consequently presents many economic benefits that stand out to the resources invested. Such effects are evidenced in economic impacts report and serve as justification for investments in infrastructure and in programs for the qualification of human resources (SANTOS, 2011; SEIXAS; LOPES, 2012).

In addition, it is important that the hotels maintain close contacts with the IT industry. This approximate contact is necessary to keep the hotels managers updated on recent IT developments. Thus, managers can then integrate appropriate IT facilities in their business, which contributes to the hotels to remain competitive in the industry, since IT capabilities are more limited by the attitude of the management of hotels, training, skills, ambitions and financial situation than in relation to the technical limitations of software and hardware systems (LAW; JOGARATNAM, 2005).

### **2.3. The IT alignment and the organizational impact**

Within the business scope, to Laudon and Laudon (2004, p. 9), IS correspond to an “organizational and administrative solution based on Information Technology to face a challenge proposed by the environment”. The authors also highlight that to understand them completely, it is required to know better the organizations, the technology that can be used, the business environment and the challenges that these three dimensions can bring to companies.

Farrell (2005) points out that IT can bring important gains associated with changes in organizational processes. The path to the success of an organization is not related to the hardware and software used, or to the development methodologies of information system, but with the alignment of the IT adopted, with the strategy, characteristics and organizational structure (ROCKART *et al.*, 1996). According to Laurindo and Rotondaro (2006), it is noteworthy, in organizations, the alignment difficulty of improvement attempts with goals and needs of businesses.

Due to constant agitations that the market has been suffering, organizations must change their plans or retrofit them under risk becoming uncompetitive. In this way, they are forced to constant changes that require agility and flexibility in the adaptation of processes. Santos (2006) states that it is in this context that IT becomes indispensable to support process management, reaching the alignment between business processes and information technology.

With respect to competitiveness, Laurindo and Rotondaro (2006) emphasize that this maintenance is achieved by interweaving two concepts: Management by Processes and Information Technology, ensuring that these make changes that a company needs to become competitive in a fierce competition for local and global markets.

The success of the IT use in organizations is effective when its use is aligned with business strategies, with the goal and with the efficient use of hardware, software or programming methodologies (PORTER; MILLAR, 1999; FERNANDES; ALVES, 1992, *apud* REZENDE; ABREU, 2003). The strategic use of IT provides a strategic knowledge essential to the survival of the organization; on the other hand, the massive use of technology may not be sufficient to ensure the successful implementation of processes (BRODBECK; GALLINA, 2007).

The alignment can be basically found in organizations on two levels. The first level is the operational integration, for which there is a need for business and operational plans (SANTOS, 2006). This level is characterized by specifying requirements and functions of the IS and the business at an operating level, encompassing structure and organizational processes that use IT as support. Therefore, at this level, IT is considered a promoter of alignment, since it is the point of support to the business integration through data, processes, people and organizational redesign (HENDERSON; VENKATRAMAN, 1993; SABHERWAL; CHAN, 2001; KAPLAN; NORTON, 2006).

The second level is the Strategic Alignment, which shows the idea of integration at a higher level, where integration occurs through the strategic adequacy of IT goals with strategies, objectives and fundamental business skills, business redirection may occur through IT (LUFTMAN *et al.*, 1993; LUFTMAN *et al.*, 2004).

Although there is little literature on the IT operational alignment, it can be concluded that the operational alignment between IT and business processes is related to the integration between these two variables. The operational alignment occurs when the information technology gives integral support to business processes and users are adapted to the interface. A consequence of the alignment between IT and business is, the more an IS is aligned with the business objectives of the company, the more its importance is perceived (BROADBENT; WEILL, 1993; WEILL; VITALE, 1999).

### **3. Methodological Procedures**

For the achievement of this study, a survey of qualitative approach was carried out, due to the fact that studies of this character provide greater understanding of certain characteristics studied, as well as the possibility to generate in-depth information about the subject (HAIR *et al.*, 2006). As to the nature, an exploratory study was carried out, that according to Gil (2010), this is a study that provides greater flexibility in searching for information about a particular problem, in order to make it clearer, and enabling the construction of new ideas about the topic addressed.

Then, the company to be used as the analysis unit was defined. The choice of the organization was of the rational or intentional type (BARROS; LEHFELD, 2007), considering the importance of that organization in the region where it operates and the way it is organized. In this way, the selection criteria is not restricted only to the ease of access to the organization (CAUCHICK MIGUEL, 2010).

As for the research method, the research is characterized by being a single case study, which introduces benefits about deepening the investigation, however, has limitations as to the degree of generalization of results (CAUCHICK MIGUEL, 2010). For Gil (2010), the case study provides an overview of the problem allowing the identification of possible factors that influence it or are influenced by it. Cauchick Miguel (2010) complements stating that the main benefits of conducting a case study are the possibility of developing new theories and increase knowledge about real and contemporary events. The analysis objects “business processes” and “information technology” were studied in the organization mentioned above.

For the operationalization of this work, the non-participant observation was initially held, which allowed the operation of the company with a focus on the sequence of activities that make the products and services to reach the customer (LAURINDO; ROTONDARO, 2006). In this type of observation, the researcher is not part of the process, only acts as an aware spectator (RICHARDSON, 1999).

After the observations are finalized, a satisfaction survey with all employees working with the information system was implemented, allowing to evaluate the prospect – on the part of users – about the IT adopted. Important activity to characterize the success of the information system and ensure its continuation (TROUBLE; BORENSTEIN, 2000). Still regarding the satisfaction survey, the instrument was validated by Iivari (2005) for obtaining the information necessary for the investigation. Finally, Figure 3 briefly presents the steps undertaken to implement this work.

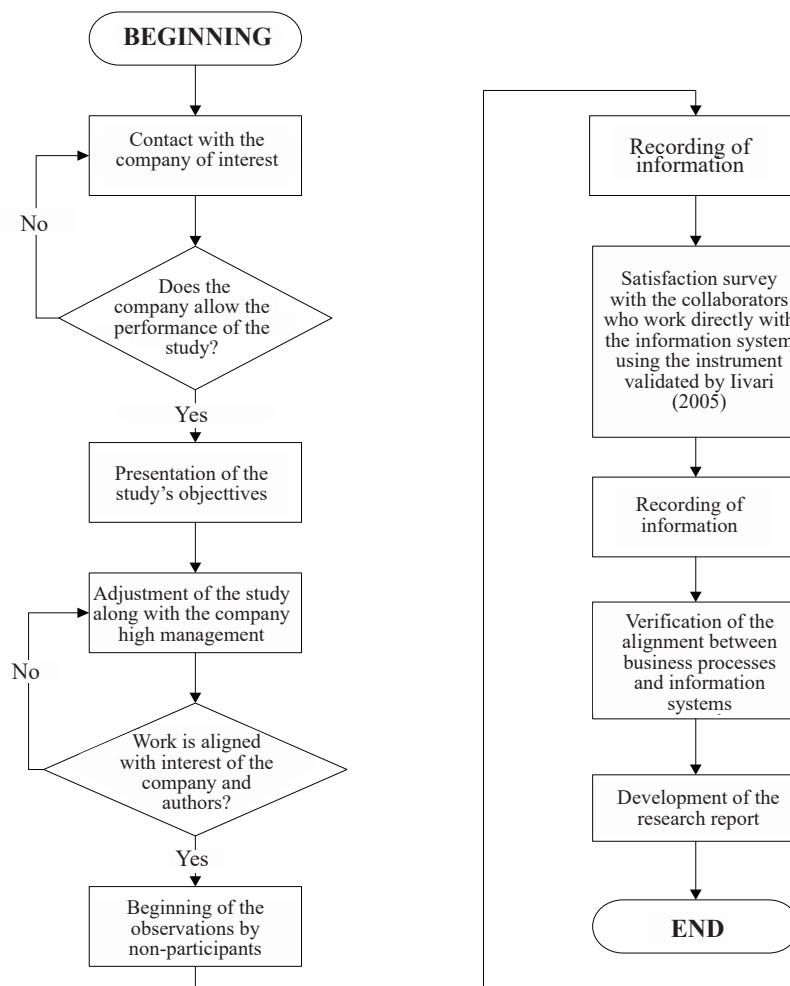


Figure 3 – Research Steps

## 4. Results and Discussion

### 4.1. Mapping of business processes

The company which served as the analysis unit is comprised of six departments: Department of Event and Convention, Department of Housing, Department of Food and Beverage, Department of Purchases, Financial Department and Department of Human Relations. The



investigation was initiated by the Department of Events and Conventions, which is responsible for supporting customers and directing them to the best solution as to the reservation of rooms for events, being those customers individuals or companies. It is divided into two functional areas: Commercial, responsible for the sale of event and Assembly rooms, responsible for layout changes of rooms for the event.

This department is responsible for seven processes: event scheduling (A.E.), preparation of the weekly map (programming) (C.M.S.); preparation of the summary of food and beverages (C.R.A.B.), which deals with weekly reports of the need for food and drinks for events; preparation of room for the event (P.S.); closure of the event (E.E.); vernissage scheduling (A.V.) – the control of rent dates of the hall for the exhibition of paintings of local and regional artists and; application process to the bidding process (P. L.).

Some processes of the Department of Event and Convention also result in generation of demand for the Department of Housing and of Food and Beverages, since some event participants spend the night – using hosting services – and there are also events that require meals in pre-defined intervals – usually coffee break and lunch – using services of the Department of Food and Beverage (A&B).

The second department observed was the Department of Housing, responsible for quality service to guests, as well as for directing them to the best solution regarding the stay. It is divided into three functional areas: reception, with purpose of services to guests; governance, with the aim of providing a clean and pleasant environment, and; gatehouse.

The Department of Housing is responsible for hosting eight processes: apartment reservation (R.A.); check-in or walk-in and allocation of the guest; Organization of Apartments (O.A.); sale of products of the showcase (V.P.V.); box lock (F.C.); elaboration of the occupancy report for breakfast (R.C.M.) – through the generation of a report on IS; laundry control process (P. L.) – When the guests' clothes are sent to the cleaners, cleaned, and returned to the guest, and; check out – when the rate of the hotel and service used is informed to the client, who makes the payment, ending the stay.

Then, the Department of Purchases, which function is to supply the need for inputs from other departments, as well as the points of sale. Although this Department is divided into

functional areas, an informal division was perceived between control and purchase activities, addressing the verification of the acquisition need and the acquisition of inputs, and input supply activities to other functional areas of the company, addressing the separation, transport and delivery of inputs to the requesting department. The processes of responsibility of the Department of Purchases are: purchases (CMP); receipt of goods (R.M.); support to requests (A.R.); inventory arrangement (A.E.) (this process happens when inputs of the headquarters are passed on to a branch or vice versa) and the input return process (D.I.) – when a Department request wrong inputs and returns to the warehouse. Another department observed was the Department of Food and Beverage, responsible for meeting the meal demand of the hotel restaurant and the participants of the events. This Department is responsible for seven processes: receipt of inputs (R.I.) – when the inputs are delivered to the kitchen functional area; preparation of meals (P.R.); assembly of the buffet (MNT); inventory control (C.E.) – carried out after breakfast; service in the restaurant (A.R.) – which deals with customer service, and the control and replacement of the buffet. The specific processes of the restaurant functional area are the Entry of Expenses (L.D.) – in the guest apartment or invoice generation –; and receipt of payments (R.P.).

Finally, the routine of the Finance Department was monitored, responsible for controlling the incomes and expenses and generate reports that support the company's investment decisions. In this Department, the recovery processes of amounts receivable (P.C.) and the shipment of forgotten objects (E.O.E.) are the highlights – both the guests and participants of the events; the process of bills payment (P.C.) and; the cash flow adjustment (A.F.C.).

Regarding the process analysis, reworks were observed, such as use of sheets and system, resulting in the permanence of identical database, which leads to waste of resources. The Department of Housing was the highlight due to the rework, more specifically the functional area Reception, since it presented the rework in many of its processes.

This step resulted in the mapping of 33 processes. The analysis of the processes of the company researched allowed to observe that the cross-relationship between the processes is strong and that many processes are complementary. This generates a strong union between the functional areas of the organization, as noted by Davenport and Short (1990). From the

mapping, we can conclude that this object of analysis is in accordance with the goals of the company, with business and strategies outlined. So, we can say that is aimed to meet the needs and desires of customers, shareholders, partners, employees and society.

#### **4.2. The Information System adopted**

The company researched uses the information system (IS) as a support for business processes, communication alternative and database. It is an Enterprise Resource Planning (ERP) system, as it allows the planning and management of the resources of the organization (TURBAN *et al.*, 2007). It is called *Desbravador*, adopted in version 3.0 (DESBRAVADOR, 2012).

Users have access to IS by entering their login and password on the opening screen. The user registration is done by the manager of the Department of Events and Conventions which is responsible for the IS. The company has adopted six modules of the system, which are: Module Events and Conventions used by the Department of Events and Conventions; Hotel Management Module, used mainly by the Department of Housing; Financial Management Module, used by the Finance Department; Inventory Control Module, used mainly by the Purchasing Department, Point of Sale Module, used by functional areas, restaurant and pub and the Electronic Calculator, which controls the connections made by the guest and registers directly into the Hotel Management Module, used by the hosting functional area.

As for the Commercial Department, it was observed that there is need for support in all processes performed. In six of these (as featured in Figure 4), the use of the Events and Conventions Module was observed and, in a specific – event closing process (E.E.) – the use of the Hotel Management Module was observed, typically used by the Department of Housing.

With regards to the Hotel Management Module, it was observed that this supports all processes of the Department of Housing. From the apartment reservation until the closure of the hosting process. In addition to providing information about the inboxes related to the hotel rates (also shown in Figure 4).

The Electronic Calculator is connected to the Hotel Management Module. The function of controlling the guests' phone calls is attributed to this device. The control is done by the

numbers of the apartments, and in case the guests use the phone for calls, the cost of these is charged directly to the account of the apartment.

The Finance Department uses the Financial Management Module, which is able to support the performance of activities of this Department. This module has access to all other modules due to the responsibility of keeping updated the cash flow for the control of expenses and to study possibilities for new investments.

During the monitoring of the A&B Department, there was little use of the information system, since most of its activities does not need that kind of support. With regards to the use of the system, two modules are used: Sales Point Module, by functional area Restaurant, for the restaurant, and to meet the demand of the restaurant; and the Inventory Control Module, to control and request inputs for the preparation of scheduled food.

When it comes to Inventory Control Module, used predominantly by the Purchasing Department, it was observed the need that the information system provides about the communication between this Department and the others, since all managers have access to this module and make requests for inputs through this.

In this way, the analysis of the IS adopted by the company that served as a study object allowed to observe that this tool is able to offer the necessary support to the processes of the organization, since the system meets various activities which require the same.

#### **4.3. Business processes and Information System adopted: alignment analysis**

Regarding the cross-relationship between business processes and information system, it was observed that the IS is able to support the everyday needs of the company. It was also observed that some processes, especially those that require control, would require more time, resources and maybe hirings for the company, if the IS did not exist. This is justified by the theory advocated by Laudon and Laudon (2004, p. 426) that “the information systems can facilitate the survival of the company”. So, the existence of a close relationship between the business processes and the IS adopted by the company can be identified.

Figure 4 represents the cross-relation of the IS adopted by the company and its business processes. The squares with colored edges not filled with colors represent the business processes, and the squares filled with the edges of the same represent the modules of the IS adopted. The processes are defined by acronyms, which are the initial letters of the words that serve as title of the process.

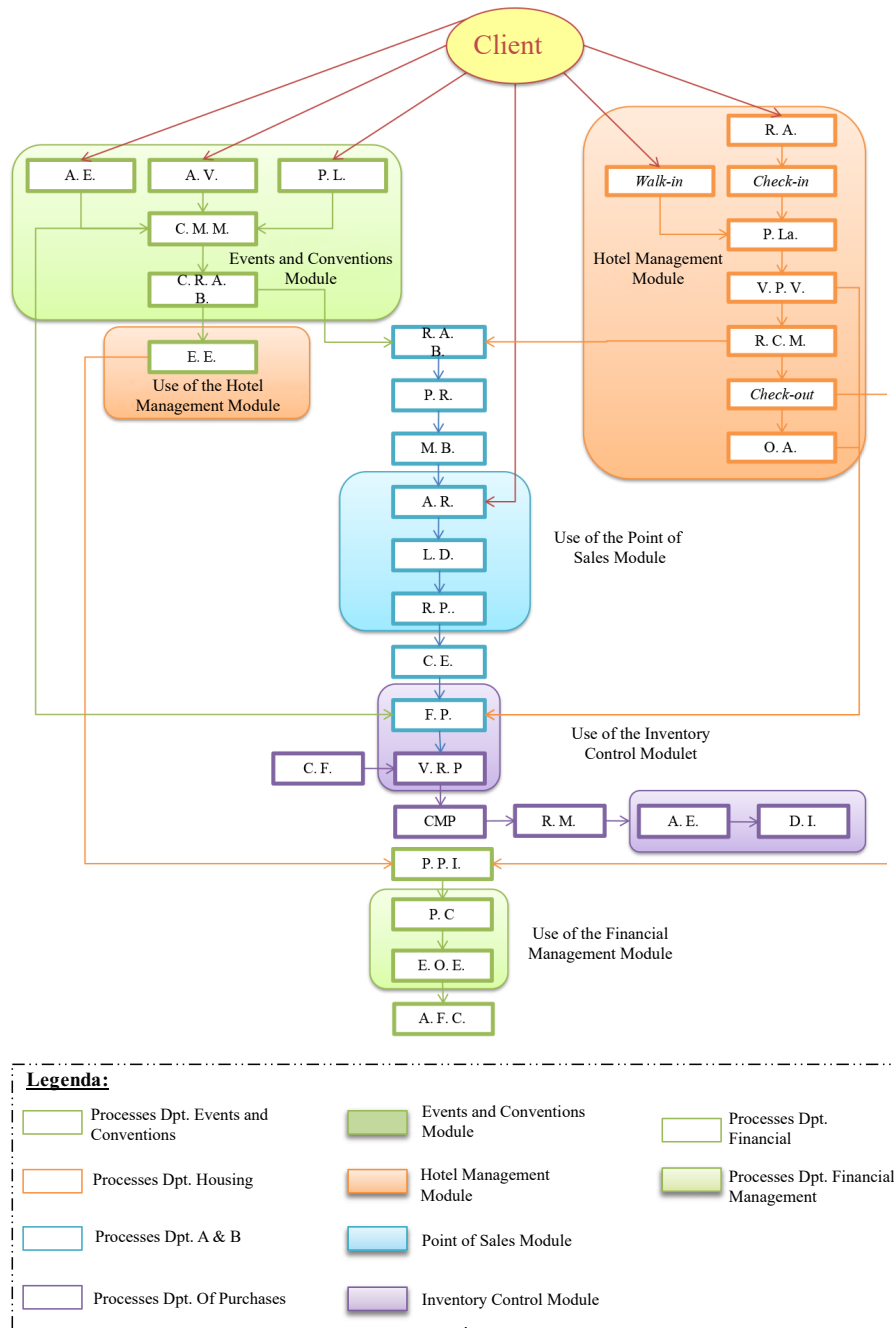


Figure 4 – Cross-relationship between business processes and the information system adopted



As for the processes of Department of Events and Conventions (represented by the green color), it was observed that the Events and Conventions Module of the IS adopted supports five of the six processes. With regards to the process of event closing (E.E.), it is done in the Hotel Management Module.

The Department of Housing, represented by the orange color, has the support of the Hotel Management Module in both data insertion and extraction of reports, safely generated in details, aim at the transparency and reliability of the organization processes.

Few processes in the Department of Food and Beverage need information system support, the processes that need are the ones connected to the restaurant, pub, room service and control of inputs. The module that supports the functional area restaurant, pub and room service is named Point of Sales, and is represented in Figure 4 by the blue color. From the analysis, it can be concluded that the resources offered by the information technology adopted are aligned to the activities. Other essential module for this department is the Inventory Control Module, which also assists the processes of the Department of Purchases.

It is important to highlight that the cross-relation between the Department of Purchases and the Department of Food and Beverage is strong due to the frequency and urgency of inputs for the buffet preparation and also in the events. As for the Department of Purchases, the operation of this department is totally aimed at the IS support. The inputs of its daily activities are received through the feature to generate report of this module (represented by the purple area). It should be noted in this module that, in case of any request made and delivered in the wrong way, the input can be returned through a resource of the information system called “return of items to the stock”. The presence of this feature shows the adequacy of information technology to the need of the organization to maintain transparency in the processes.

Regarding the Financial Department processes, the support of the Financial Management Module is obtained. This module allows communication with the banking system, featuring a cross-organizational system, according to the classification of Turban *et al.* (2007), technologies that connect different companies, and also featuring this process as cross-organizational (DAVENPORT; SHORT, 1990). It is through this facility that the

payment of the bank payment slip is controlled, which is sent to customers who choose the billed payment.

The cross-relationship between the processes of the Financial Department and Financial Management Module clearly shows the possibility of integration between modules of the IS adopted, since to perform the billing to customers, the Financial Management Module receives information from the Department of Housing and Department of Events and Conventions, which also features the system and process as cross-functional (TURBAN *et al.*, 2007; DAVENPORT; SHORT, 1990).

With respect to alignment, it is important to highlight the feature of customization of modules. The Events and Conventions Module, for example, has the same identification of the rooms in the system as in the physical structure, the Hotel Management Module has the same identification as the apartments. In addition, it allows the system administrator to update the values of goods and services.

With regards to the Hotel Management Module, it is important to note that the organization of apartments offered by the IS adopted, in categories such as “luxury double” “luxury single”, among others, is customized, allowing adaptation of the Information System to any reality or even reform of the physical structure and possible change, also denoting in flexibility, important feature of an Information System.

It is also important to highlight the generation of reports. IS generates reports of incoming and outgoing funds, number of daily, weekly and monthly guests, number of meals served at the restaurant and at events, input values passed on every cost center (Department), among others. IS also generates statistical reports related to income and expenses of the company with activities of a particular department, pointing seasonalities. The ability to generate this information is essential for the management of the company’s processes, since it is not possible to manage what is not measurable (KAPLAN; NORTON, 1997).

It is possible to check that some aspects in the alignment between the processes and the IS adopted converge with literature. It was understood that the use of IT contributes to activities such as the completion of registration of customers, inventory and finance control, personalized service on reservations and other activities since the check-in, from the stay to the

check-out of the company's customers (ROSEN; HOWARD, 2000; YELKUR; DACOSTA, 2001; CARVELL; QUAN, 2008).

That way, IS adopted is aligned with the business processes of the organization used as the analysis unit. Thus, it is concluded that information technology has the potential to offer full support to business processes, increasing the quality in the main proceedings of the business and support processes of the organization. This aspect can be corroborated through the literature, because Law and Jogaratnam (2005) believe that IT can contribute in addition to technical applications, and may be part of the management approach to emphasize the quality of the services in the hotel business.

#### **4.4. User satisfaction with the Information System adopted**

This goal was achieved through the application of a questionnaire divided into five groups of variables – constructs. The first group addresses variables of employee profiles. Then, this group evaluates the quality of the information system adopted, quality of output information, user satisfaction, actual use and individual impact on the employee.

For measuring the agreement level of the statements, a Likert-type scale of seven points was used, where the assignment of the number 1 represents a negative feature and the number 7 represents a positive feature. That way, it was established that the values 1, 2 and 3 correspond to unfavorable points; the values 4 and 5 are neutral points; and the favorable points are those over 5. Then, the explanation and representation of different means are presented, obtained in each of the items of the assessed constructs measured by the arithmetic mean.

All users of the information system answered the questionnaire, totaling 20 users. The profile of respondents with regards to the gender is: 55% is male and 45% female. According to the data, users are allocated in five departments. 9% are allocated in the Department of Food and Beverage (A&B), 27% work in the Department of Events and Conventions, 9% in the Department of Purchases, 46% in the Department of Housing and another 9% in the Financial Department. With regards to the time in the company, it was observed that most of the employees are in the company for more than two years.

With regards to the construct quality of the information system adopted, this is composed of six variables, which showed averages that indicated user satisfaction with the information

system adopted: flexibility (about 80% of the respondents were satisfied with the flexibility of the IS adopted), ability to communicate between modules (about 90% of the respondents were satisfied with this feature), ability to communicate with other information systems (approximately 60% of the respondents were satisfied with this aspect of the IS adopted), assessment of response time (85% of the responses showed satisfaction with the response time of the IS), recoverability assessment (approximately 75% of the respondents showed satisfaction with the recoverability of the IS), convenience and evaluation assessment of ease of interaction (interface) (100% of users are satisfied with these aspects). Users were satisfied with the IS.

As to the construct quality of output information, it consists of the variables: volume, precision, completeness, accuracy, consistency, acceptance and format of output information. The research data made it possible to conclude that the quality of information is satisfactory to users, since the answers showed 100% of satisfaction for these aspects.

The constructs user satisfaction, actual use and individual impact in the employee also obtained average considered as favorable. It should be noted that more than 80% of employees believe that the use of the information system is essential for the accomplishment of the work. And about 90% believe that the use of IS increases the productivity and effectiveness. Result that can also be perceived in the current literature on the topic (WATKINS, 1995; LAW; JOGARATNAM, 2005).

In this way, it can be concluded that, from the perspective of users, the system performance is satisfactory. In all the constructs measured by means of scale, it was observed that the greatest concentration of frequency of responses was in part considered to be favorable to the Likert scale. Then, according to the research with users, the information system is aligned with business processes.

## 5. Conclusions

The completion of this study, which aimed to explore the relationships between the business processes and information system adopted, provided greater understanding about the relationship between these two components of the organization. To do so, a company in the hotel sector was used as an analysis unit, justified by the importance of these organizations in the next few years and, above all, the importance that these companies are well structured and prepared to provide a service of excellent quality. The objects of analysis were the hotel business processes (those that were allowed to researchers) and the six modules, acquired and used as the base for activities, of the *Desbravador* system, version 3.0.

As for processes, data analysis allowed the mapping of 33 business processes and also the structuring of departmental activities. Regarding the process analysis, we observed several reworks, which can lead to waste of resources. In this sense, the Department of Housing was the highlight - more specifically the functional area Reception - with rework in many of its processes. With the monitoring of business processes, it is possible to see the essential support that the information technology adopted offers to the processes. There are processes that would require more time, resources and maybe some hirings for the company, if the information system did not exist. So, the existence of a close relationship between the business processes and the IS adopted by the company, can be identified. With regards to the alignment between business processes and Information System adopted by the company, it can be concluded by means of monitoring during the research, that IS offers the support necessary to the processes of the analysis unit investigated, because the information system provides the support needed to processes. Even so, it is believed that through the redesign of some processes, the IS adopted may be better employed and thus promote greater alignment. Since there are many processes in which there are reworks.

With regards to the limitations of this study, which for reasons of information security on competitiveness, the Human Resources Department, which also acts as internal auditor, did not allow the access to process mapping or to display the modules of the system used.

With regards to methodological limitations, one can cite the fact that it has not been possible to conduct interviews, which would bring contributions to a better evaluation of the variables.

It is suggested that, for future studies, the performance to a greater alignment in the organization on the elimination of reworks mentioned in this research, as well as to conduct studies in

other organizations in the same sector so that they can make comparisons between different business realities, being possible to obtain a wide reality of the sector through the study of multiple cases. Still, it is possible to carry out a survey aimed at the satisfaction analysis of employees of hotels in relation to the information system adopted by the employer.

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