THE USE OF INFORMATION SYSTEMS IN HOTEL MARKET OF CLUJ-NAPOCA

ROZALIA VERONICA RUS

ABSTRACT. The main objective of this paper is to review of the information systems used by hotels in their activity. Also, we want to determine the information systems used in hotels from Cluj-Napoca, Romania and to present their main characteristics and capabilities.

Keywords: Hospitality Information Systems, software, Property Management Systems, hotel industry.

Introduction

The tourism industry has been a pioneer in developing and implementing information systems. The airline companies were the first that implemented reservation systems and the central reservation systems have been used by hotels chains since 1960. If we refer to the hotel industry, a room management application was installed at the New York Hilton in 1963 and a property management system was installed at Waikiki Sheraton in 1970 [Heart et al., 2001, Collins, 1997]. The information and communication technologies were used by hotels, in the past, to simplify the client registration process, to cut operational costs, but nowadays, are used to increase clients’ satisfaction, employees’ productivity and the quality of services offered by hotels.

Literature review

The e-Business W@tch study carried out by the European Commission, Enterprise & Industry Directorate General in order to monitor the growing maturity of electronic business across different sectors of the economy in the enlarged European Union, EEA and Accession countries revealed that, considering ICT adoption and size of companies, small tourism companies are more active users of e-business compared to their counterparts from other industries. According to the same source “the gap between big and small companies in using ICT and e-business applications may be relatively smaller than in other industries” [1]. In Europe, about 92% of companies in the tourism sector are micro enterprises, 7%

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1 Teaching Assistant, PhD, Faculty of Business, Babes-Bolyai University, Cluj-Napoca, Romania, veronica.rus@tbs.ubbcluj.ro
are small enterprises and only 1% are big companies [1]. At the European level, 20% of the companies in the accommodation sector use the Intranet. The main software systems used by European companies in the accommodation sector for planning and decision-making are: accounting software (40% of firms), ERP systems (13%) and Document Management system (15%) [1].

The Hospitality Information Systems (HIS) can be classified according to different criteria:
1. Coverage area:
   a. Systems designed to ensure the information flows between the hotel's main departments: accounting information systems, human resources, ERP, property management systems, restaurant management systems, POS, etc.;
   b. Systems designed to ensure the information flows between the organization and its partners (customers, suppliers, banks). In this category can be included the online reservation systems, Customer Relationship Management (CRM), Supply Chain Management (SCM), e-banking.

Customer Relationship Management systems (CRM) can be used by hotels to improve customer satisfaction. CRM help companies to better understand customers’ needs and to adapt their offer based on client’s personal purchasing patterns. CRM are mainly used only by larger companies, such as airlines or hotel chains [1].

2. According to their role in the decision making process the information systems can be classified in three main categories: operational-level systems, management-level systems, and strategic-level systems [2].
   a. Operational-level systems: support operational managers by keeping track of the elementary activities and transactions of the hotel such as booking, reservations, sales, payments, payroll, client registration, supply. Transaction processing systems (TPS) are included in this category. TPS are used to record daily operations of an organization and to keep detailed records of them. The main features of these systems are: contain detailed data, process a large amount of data, contain historical data (describe activities that took place within the organization), the input data and the generated information are highly structured. Property management systems (PMS), reservation information systems, accounting information systems, restaurant information systems are TPS.
   b. Management-level systems: “serve the monitoring, controlling, decision-making, and administrative activities of middle managers” [2]. Management information systems (MIS) and decision-support systems (DSS) are included in this category. MIS provide predefined reports to managers, reports obtained by summarizing and processing the detailed data from TPS. Decision Support Systems (DSS) are systems that use data, models, and analysis tools and help decision makers to solve unstructured or semi-structured problems.
c. Strategic-level systems: Executive information system (EIS) are designed mainly for strategic management, the main purpose of these systems is to provide top-level managers the critical information they need, at the right moment and in the right format. These systems are easy to use, integrate data from different sources, give managers an overall image of business, provide aggregate information but managers can drill-down for more detail information. Expert systems (ES) are specialized systems that provide solutions and give advices to managers. These systems use knowledge base consisting in a set of rules.

The information systems used in hotels can be also classified in:

a. **Front-Office** systems: are hotel guest-centric applications that deal directly with guest needs, including reservations, reception, cashier, point-of-sale (POS), housekeeping, and sales of food and beverages.

b. **Back-Office** systems: have different functions such as finance and accounting, inventory, procurement, human resource management and office automation.

**Problem formulation and methodology**

We must specify from the beginning that this study is only a part of a more comprehensive study on the readiness of hotels from Cluj-Napoca to implement Decision Support Systems and in this paper we will include only the results that refer to the use of information systems in hotels. The research uses a paper-based questionnaire and has been carried out in Cluj-Napoca on small and medium-sized hotels. One of the purposes of our study was to identify the information systems used by hotels in their activity.

The sources of information for this paper are primary and secondary: the primary came from the data gathered from questionnaires, and the secondary are obtained from the Internet, research studies, books, statistics etc. The questionnaire was applied to hotel managers during the time span October 2008 - November 2008. Because by the end of 2008 we were able to identify 41 hotels in Cluj-Napoca, we decided to apply the questionnaire to all the hotels. We observed that there were hotels that were managed by the same person and used the same information systems; therefore, in order to obtain relevant results, we applied 1 questionnaire per manager. The overall population was of 38 managers. Taking into consideration that the number of applied questionnaire was relatively small we opted for the traditional paper based survey, and for face-to-face interview. The number of complete and correct questionnaires was 33, therefore, the response rate was – 86.8%. The data were processed using statistical tools.
Results and discussions

*Hotels characteristics:* from the total number of hotels included in this study – 36.4% are 3 stars hotels, 30.3% hotels are included in 2 stars category, 27.2% are 4 stars hotels, 3.0% are 1-star and 3.0% are 5-stars hotel. The majority of the hotels included in this study (69.7%) are small hotels with less than 50 rooms, 24.3% are medium capacity hotels (50-150 rooms) and 6% have more than 150 rooms. All hotels included in this research are small and medium size enterprises.

The most prevalent front-office applications, in hotels from Cluj-Napoca, are reservations and front-desk automation and the most widespread back-office application is accounting. Clients can make online reservation directly from hotels sites, 92.6% of the hotels from Cluj-Napoca city have their own web site [3]. The POS applications are used by hotels in restaurants and in other points of sales. The systems that are least used by hotels are CRM and ERP.

**ERP systems** are an integrated collection of functional applications that help to integrate and cover all major business activities within a hotel, such as reservation, inventory management, accounting, sales, marketing and human resources, etc. and share a common database.

**Property Management Systems (PMS)** should not miss from any hotel. These systems have a number of modules that are necessary for the activity in a hotel. A PMS has functions both for front office and back office but also a number of other functions: the event management, the calls management accounting, sales and catering, etc. In Romania some of the vendors use the term PMS for reservation and front-office automation systems.

The main functions of a PMS are:

- reservation: enter, modify, visualize, block or cancel the individual or group booking;
- automatic confirmations;
- establish the room rates - on client, weekday, season;
- enter, modify, and view clients’ information (individuals, companies, travel agencies);
- centralize the web reservations;
- guest registration, gather the personal data about the guests;
- room allocation;
- payments collection;
- view client history – the information about clients are kept in the database and, when a client returns with a new reservations, their preferences are already known. The data about clients can be used by the marketing department to generate the labels for the correspondence, for different statistics, for marketing analysis, etc.
- housekeeping;
- call accounting;
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✓ night audit;
✓ guest check-out;
✓ room management: occupancy, room status (occupied, available, clean);
✓ search data by: name, company, room number, reservation number, arrival date, status, depart date;
✓ connectivity with MS Office Suite (Word, Excel, etc.)
✓ report generation, statistical reports, forecasting.

Some of the PMS reports are: revenue per available room, the history of occupancy, reservation, in house guests, arrivals, departures, market statistics, travel agencies statistics, revenue/cost report, room statistics and night audit reports. A number of PMS allow users to create ad-hoc reports. PMS can be connected to a CRS (Central Reservation Systems) offered by an hotel chain, or to an Independent Reservation System (IRS). Also, CRS and IRS can be connected to the reservation systems of airline companies, making a Global Distribution System (GDS). A GDS provides centralized control and distribution of bookings. The most known GDS are - Sabre, Amadeus, Galileo, Sistem 1 and Wordspan. PMS can be connected using software interfaces with other systems implemented in hotels:
✓ Electronic locking systems;
✓ Call accounting systems;
✓ Accounting and financial systems;
✓ Pay-TV systems;
✓ Point-Of-Sales systems (POS);
✓ Energy management systems.

Some PMS, for example Medallion, include also a Business Intelligence (BI) module. BI systems perform a wide range of analysis: optimization, forecasting, sensitivity analysis, real-time analysis and use a variety of dashboards for data visualization. Using BI managers can monitor and explore key performance metrics by brand and property, including rooms sold, room revenue, revenue per available room, room revenue per available customer, room rate, other revenue, occupancy percentage, arrivals/departures, available/occupied rooms, etc.

Factors in choosing a PMS are: the hotel capacity, hotel location (if it is an independent hotel or is a chain hotel), the interconnectivity with other systems. Fidelio is used by 24.24% of hotels from Cluj-Napoca that participated at our study (Figure 1). Fidelio is the PMS offered by Micros Systems, one of the world’s leading suppliers of enterprise solutions for the hospitality industry. Micros was founded in 1977 in USA having as main activity object the development of restaurant information systems. Fidelio Software GmbH was founded in 1987 and it was specialized in the development of PMS. These two companies merged in 1995 and Micros-Fidelio became a standard in hotel industry. Some of Micros’ clients are: InterContinental, Best Western, Four Seasons, Fairmont Hotels, and form Romania - Crystal Palace, Euro Hotels& Suites, Capşa, Continental, Intercontinental, Hilton, Marriot, Sofitel, etc. An online demo version of this PMS
can be accessed at the following link: http://213.70.229.154/tsweb/. The system can be installed on Microsoft Windows and uses Oracle database management system. The HostWare winFRO front office system is part of the HostWare integrated hotel solution offered by HostWare Kft., Hungary. The system can be installed on the following platforms: Windows NT, Windows 2000, Windows 2000 Server and Windows XP. In Cluj-Napoca this system is used by 24.24% from respondents. Medallion is a SoftBrands’ product and is used by 18.18% of hotels included in this study. The system can be connected with Medallion Web Booking Engine. This module can be included in the hotel-website and clients can make online reservations. The information about the available room types and room rates are imported from PMS. Another PMS used by hotels from Cluj-Napoca is the system developed by Classoft Company, Cluj-Napoca. The product offered by Classoft is an ERP which has been configured to suit the requirements of a given hotel. The system was created in FoxPro and has both MSDOS and Windows versions. This PMS can be integrated with other modules created by the same company: accounting module, module for stock control and restaurant management module. WinMentor is the accounting system used by nearly half of the hotels included in study, followed by Platphorma and by the Classoft’s product (Figure 2).

**Figure 1 Property Management Systems**

![Pie chart showing the usage of different property management systems](image)

Source: own calculations based on questionnaire
CompAs is used by only one hotel and the remaining hotels use other accounting systems, such as: Reiges, Contiform, Assis, Practer. For restaurant hotels use different products. MagicPOS Hospitality 2000 is preferred by 15.15% and MICROS 3700 HMS by 12.12% of hotels (Table 1). Another important software application, specific to hotel industry, is Revenue Management (RMS), known also as Yield Management. RMS helps hotel managers to maximize profits.
by setting room rates based on a careful analysis of the demand. Using these systems managers can determine whether the rates or the number of rooms allocated for a particular market segment or for a specific rate should be increased, reduced or maintained at the same level.

Yield Management is based on analysis and interpretation of the demand curve. A RMS identifies reservation patterns on room types and market segments through analysis of variables (weather, length of residence, history book, customer profiles, etc.) and compares them with a set of heuristic rules formulated by managers. Revenue Management is a new, attractive field for implementing the DSS models. The RM has as main objective the maximization of the average revenue (profit) per room based on the anticipation of the demand and by determining the highest rate value customers are willing to pay for a room. Another object is to decrease the seasonality of the demand, transferring the excess of the peak in other time intervals. RMS contains models by which the customers can be classified, can estimate the demand, the occupancy, the rates for each client’s category, and these elements can be dynamically modeled.

Conclusions
In this paper we made a review of the information systems for the hospitality industry. In the second part of this article we identified the information systems used by hotels from Cluj Napoca. The most widespread systems in the studied hotels are PMS (93.94 %), systems used for Front Office automation, and the most common back-office systems are accounting systems (96.97 %). More than a half of the studied hotels use one of these two PMS: Fidelio and Hostware WinFro. Nearly 1/5 of the hotels are using Medallion PMS. WinMentor system is used by nearly half of the hotel, followed by the Platphorma. There are no significant differences on the use of information systems by small, medium capacity hotels or big hotels. Hotels form Cluj-Napoca use information systems in their daily activity, but the information systems for management are absent from hotels. Only a small number of hotels have integrated hotel solutions that are connected to the rest of the independent systems installed in hotel (accounting systems, call accounting, etc).

REFERENCES

