



INFORMATION SYSTEMS SUPPORT TO THE HOSPITALITY MANAGEMENT OF NOVI SAD

Slobodan Čerović, Slađana Batić

Singidunum University, Serbia

Abstract:

The task of this paper is to perceive the usage of information technologies in hotel business in Novi Sad, as well as the level of utilization of the present information technologies potentials. In terms of that, the level of computer competence of the employees and the quality of conditions for information technologies implementation in the hotel industry of Novi Sad, are analyzed. The following indicators were examined: computer existence in hotels and in which positions, possibility of the Internet usage and the connection type, the availability of the Internet and data bases to the hotel guests, the existence of the hotel web site presentation, possibility of on-line booking and the existence of hotel information system (HIS).

The research for the purpose of this paper was conducted on the sample of five hotels categorized 3* - 5*. Data were collected by survey method, using questionnaire as the instrument for collecting necessary data.

Key words:

information technology,
hospitality,
the Internet,
reservation systems.

INTRODUCTION

It is impossible to perceive the efficacy of strategic adaptation to contemporary trends in hospitality, without the role of the Internet, which becomes the main way of communication and sale in tourism and hospitality. The significance of the Internet reservations, i.e. on-line system and web site service, is increasing today, and this way of communication is fast, mass and inexpensive. How fast the Internet is developing can be seen if take into consideration the fact that it originated from initially textual media to multimedia for information transfer. (Barjaktarovic, D., 2013.p.240)

The influence of new trends causes behavior changes of consumers in tourism and other fields. These changes are reflected in following:¹

- ◆ Tourists demand higher standard of services
- ◆ Tourists want more detailed presentation of package arrangement
- ◆ Tourists become more mobile and less loyal
- ◆ Price sensitivity is increased and supply comparison is more intensive
- ◆ Tourists prefer more short breaks
- ◆ They make decision about travelling at last minute which results in shorter period between making reservation and service consumption

More intensive market segmentation occurs as a result of quoted changes, i.e. consumer addresses to several segments at the same time. Information and communication technologies are very important in overcoming these and similar challenges in tourism industry.

INFORMATION TECHNOLOGIES IN TOURISM

The necessity of using information technologies is one of conditions to improve competitive position in tourism market. The Internet overcame the gap between hotel and hotel services consumer and provide more interactive communication. The benefits of the Internet usage in hotel industry are following (Barjaktarovic, D., 2013.p.240)

- ◆ Market increase (the world is market). Large number of services enable that messages are delivered very fast from one part of the world to the other, which makes that attractive, but not affirmed enough, tourist destinations become available to numerous potential tourists, who are looking for attractions and new challenges.
- ◆ Significant costs reduction. Information delivery costs, as well as its realization, via the Internet are lower in comparison to the other type of physical delivery.
- ◆ Possibility of constant communication with potential tourists worldwide (two-sided communication)

1 Ibidem



- ◆ Possibility of high quality promotion of product
- ◆ Possibility to sell without intermediary
- ◆ Possibility of getting more detailed information in on-line mode
- ◆ More efficient time usage of potential tourists considering electronic payments and reservations
- ◆ Providing more complete information in a unit of time
- ◆ More efficient control of implementation of objectives and actions in a company

Nowadays, the Internet is dominating media for information transfer and in modern business almost each hotel has its own internet presentation. In hotel business, the Internet is used in a phase before booking (information regarding facilities, prices, etc.), booking phase (on-line booking) and after guest check – out (Barjaktarovic, D., 2013.p.241). The Internet usage in tourism leads to integration of operating systems, maximizes intern efficiency, reduces a number of employees in administration, as well as in domain of communication with consumers, and provides direct contact between consumers and tourist services providers. Increase of World Wide Web, e-mail, mobile communications and interactive digital television are very significant in contemporary tourism. Tourist services are more often based on using the Internet as main communication channel, that provides reduction of operating costs and increases a number of consumers. Tourists are enabled to realize direct communication with final tourist services providers and they have possibility to identify, satisfy or modify their demands for tourist products, while on the other side, service providers can be more efficient in satisfying more and more complex demands of their consumers. The Internet provides constant availability of information, planning and arranging of holidays for its users. Tourist products supply on the Internet is characterized with high transparency and possibility to see product before final purchase. These advantages make the Internet attractive distribution channel of tourist products.

In tourism business, web site is the most important platform of e-commerce (electronic commerce). E-commerce includes exchange of business information, maintenance of business relationships and operating business transactions using telecommunication network facilities. More simplified definition includes buying and selling of products, services and information by network. Thus it can be said that e-commerce is a concept that describes processes of buying and selling, i.e. products, services and information exchange by computer networks, including the Internet.(Koncar, J., 2003.p.55). Communication technologies provide special speed for information transfer and represent strategic mean for achieving competitive advantage. Using these technologies, airline companies, travel agencies, rent-a-car organizations and later on big hotel systems, abandoned classic business and move over electronic business. Mentioned participants in tourism realized very soon that globalization in business can be achieved only by connecting with systems of electronic booking because that is the only way to achieve efficient

supply of hotel and tourist services worldwide. Moving over electronic business, companies are able to:²

- ◆ Analyse data and perceive cause – effect relationships
- ◆ Develop statistical and mathematical programmes for more efficient resources allocation
- ◆ Contribute more efficient decision making using mathematical models and programmes

The growing mass of travel trends and globalization cause enterprises in travel industry to develop efficient information and communication systems. Internal communication in a company is possible with intranet, the network that provides employees communication, faster data and documentation exchange and faster information availability. On the other side, there is extranet, the network that is available to clients and associates of the company but in limited conditions. Operating of intranet and extranet is possible only if they are supported by global network – the Internet. Due to the Internet, information approach is faster, simplified and inexpensive.

As the main way of sale, the Internet dominates in all industries, so in tourism as well. Business globalization by the Internet leads to more successful distribution of services and costs reduction. Simplified information availability, which is the base of constant communication with demand, is enabled due to the Internet.

Appearance of CRS on the Internet, as well as possibility of on-line purchase of services regarding travelling, led to worldwide availability of CRS products. CRS SABRE via Web portal Travelocity, that is available in over 140 countries and collects 83.000 travel agencies, is one of the most powerful travel web sites in the world (Bakic, O., 2008.p.242).

The number of business people, who use the Internet to organize trip on their own, is increasing. Therefore, business trips include the most part of on-line reservations, not only because of that there is always less confusion with business trips if comparing with leisure, but also because of that people who take business trips are often more educated and better at using computer and the Internet.

In spite of numerous advantages of the Internet, there are also disadvantages that can not be omitted. The Internet, as well as any other media, can be used hastily which leads to consumers dissatisfaction. Web sites often provide outdated or incorrect data, making more harm than use that way. This is not new problem in tourism. Ubiquity of the Internet, possibility for everyone to public any kind of material about any destination, can confuse potential consumer. This is more possible because there is usually the matter of the materilas uploaded by tourists, who don't have any obligation to respect data exactness.

INFORMATION TECHNOLOGY IMPLEMENTATION IN HOSPITALITY

Modern business in hospitality is characterized with a large amount of information which handling requires

² Ibidem



projecting information system, which will connect and facilitate the overall hotel business. The Internet usage in hospitality is increasing constantly, and a hotel internet presentation, as an unavoidable part of hotel business, presents hotel information, range of services, reservation possibilities etc. Electronic business in a hotel is firstly related with on-line reservations and interaction with clients and partners. Some results of electronic business are self check - in and self check - out, with the aim of simply and fast guest registration with the implementation of non-cash payment, using payment cards.

Applications of information technology systems, that are implemented in tourism and hospitality, are following (Barjaktarovic, D., 2013.p.242).

- ◆ The Internet / intranet / extranet
- ◆ Applications used for reservation management, supply, selling, finances, accounting
- ◆ Decision support systems, management information systems
- ◆ Data bases
- ◆ Computer reservation systems
- ◆ Global distribution systems
- ◆ Destination management systems
- ◆ Interactive digital television
- ◆ Touch screen terminals
- ◆ Other

The most frequent spheres of information technologies implementation in hospitality are:³

- ◆ Front office – reservation, check – in, payment
- ◆ Back office – finances and accounting, marketing, human resources, hotel housekeeping
- ◆ Tourist services
- ◆ Communication with tourists and partners
- ◆ Marketing research
- ◆ Monitoring of productivity and profitability indicators
- ◆ Control of business processes and staff
- ◆ Other

Information technologies implementation can make a great contribution to service quality, resulting in greater guest satisfaction. For example, PDAs (Personal Digital-Assistant) are helping at the reception desk, by speeding up check- in and check- out, as well as to service staff in hotel restaurants, speeding up service process by sending orders directly in a bar or a kitchen using PDAs. Success rate of hotel business depends on the type of collecting, processing and use of information. Hotel companies are forced to introduce information systems for hotel business management, so they can satisfy new generation of sophisticated guests and exist in the market.(Unkovic, S., Zecevic, B., 2006.p.444).

Due to fast technical and technological development, human resource sector is responsible for educating employees about operating with new systems, regarding each innovation that hotel accepts. It is well known that human factor is a main resource for providing hotel services, and therefore it is very important to facilitate eve-

ryday routined operations for employees, which is possible to achieve by implementation of suitable information technologies. Information systems help employees in all sectors in a hotel company to focus on operations improvement and making its service more valued, which contribute to greater guest satisfaction.

Particularly important is that formed information system enables unique control of internal operations (front office, back office, F&B sector) and external operations (reservation system, marketing and distribution). This results in creating integrated management system in a hotel business, which is essential factor for the improvement of company competitiveness, because it provides necessary information for decision making (Spasic, V., 2003.p.58).

Among latest tendencies is a Smart room system, which implies efficient hotel room management, hotel facilities, guests and hotel staff. This system provides following: (Njegus, A.,2010.p.157)

- ◆ Energy saving
- ◆ Room resources management (air conditioning, lighting, blinds, water valves, electric lock, room temperature regulation depending on the rate of occupation etc.)
- ◆ Monitoring and warning (SOS alerts, alerts for water lackage, oppened windows or doors, electric instalations monitoring, etc.)
- ◆ Guest status monitoring (guest in room, room cleaned, call the maid, etc.)
- ◆ Entrances and exits control
- ◆ Card payments at the points equipped with POS terminals, which are connected with the main control system in a hotel

Development of Smart card system significantly improved functionality of Smart room system. Advantages of using these cards in hotel business are following (Njegus, A.,2010.p.158)

- ◆ solve the problem of frequent loss or copying a key (earlier it was necessary to change lock cylinder, while nowadays it is enough only to cancel the card)
- ◆ Card is awarded with a desired time duration
- ◆ staff can be assigned to the card with a defined areas of access (no longer need to carry a bunch of keys)
- ◆ reading records from the lock can be performed for further analysis of entries which increases the safety of the guests and reduces the possibility of theft and unauthorized entry
- ◆ It is possible to issue multiple cards for a single room (if there is a need for more than one person to use a single room, and not necessarily together)
- ◆ It is possible to use the same card to open the gate or hotel garage ramp or any other door, as well as to use it for hotel services charged to the room by connecting to the hotel business system
- ◆ Cards can be prepared in advance what will result in avoiding the crowds and waiting guests at the reception to check - in, and that is especially suitable with large groups



As far as hotel business is concerned, two components of technological information systems came to the fore: Computer Reservation Systems – CRS and Property Management Systems – PMS, which have important role in income operating management and getting along with guest history (Njegus, A., 2010, p.153).

Computer reservation systems – CRS as a part of hotel packages for hotel business, provide approach to information that are located in a guest data bank. These data regard sex, age, nationality, profession, favorite dishes, habits and preferences etc.⁴

Property management systems – PMS include administration, planning and operating functions (accounting, research marketing, planning etc.), income management, staff management, centralized control for hotel chains etc.⁵

Property Management Systems – PMS

Property Management Systems – PMS are basic component for hotel business management and need to provide tools which are necessary for hotel staff in everyday operations (reservations, check - in and check - out, accommodation capacity management, fulfilling guest needs, accounting etc.). The main PMS functions are: (Njegus, A., 2010, p.154-155)

- ◆ Operating hotel business management
- ◆ Accounting and bookkeeping
- ◆ Reception operations
- ◆ Sale and marketing
- ◆ Human resource management
- ◆ Gastro operating (controlling POS terminals, orders, staff, pricing, payment types etc.)

Nowadays, the most common PMS in the world is OPERA Enterprise Solution. American company Micros Systems Inc and German company Fidelio designed Micros Fidelio 20, system solution for hotel business management for all hotel types. They integrated several firstly designed system solutions into one, creating integrated system of interrelated moduls and all spheres of hotel business. It is possible to modify configuration of this softver later on, in accordance with the requirements of each hotel (Barjaktarovic, D., 2013, p.244). Except OPERA Enterprise Solution, there are also other softver solutions in the market: Amadeus Hotel Platform, Total Hospitality Experience, Essense Hospitality Solutions, Hansa World, Starfleet, Innquest, Reservation Management Software etc. All of these softvers are created using the same principle with the basic difference in that how much are they acceptable, standardized, efficient and adaptable.⁶

Computer Reservation Systems – CRS

Establishing its own reservation system and getting involved with contemporary reservation systems is one of the basic preconditions of successful business policy

of modern hotel company. Computer reservation system – CRS is central system in hotel business that is used for collecting and storing of information and it provides making reservations and tools for increasing overall bookings and incomes. The main functions of this system are: (Njegus, A., 2010, p.156)

- ◆ Reservations – handling reservations, room availability overview, price, deposits handling, possibility of transfer reservation, restaurant reservation, leisure activities etc.
- ◆ E-commerce – web portals and possibility of making reservation 24/7
- ◆ Customer Relationship Management CRM – collecting and managing information about guests, room services, mini bar, the Internet etc.
- ◆ Global Distribution System – GDS interface – connecting with global distribution systems that were formed by merging central reservation systems of airline companies because of placing hotel capacities.

The first system of this type in American market was introduced in the mid-60s of the last century, by American Airlines through SABRE system and later on it was spread on travel agencies as distribution channel. In the mid-80s of the last century, CRS developed into global distribution system GDS that supplies with wide range of tourist products and services and provides mechanism for communication between airline companies and travel agencies. Development of CRS into GDS integrate tourist services, use CRS infrastructure and provides additional value for services. Soon, other big companies implemented modern ways of communication and that resulted in new systems development: in American region APOLLO (United Airlines) and WORLDSPAN (connecting DATAS System – Delta Airlines PARS System – TWA), in Europe GALILEO (Alitalia, British Airways, Swissair, KLM, Covia) and AMADEUS, in Asia ABACUS (Barjaktarovic, D., 2013, p.246). There are few smaller regional GDSs such are: Infini and Axess (Japan), Tapas (Korea), Fantasia (South Pacific), Abacus (Asia – Pacific) etc. that are primarily in a service of interests of specific regions or countries. Two leaders among systems of this kind, in tourism and hospitality, are AMADEUS and PEGASUS SOLUTIONS.

AMADEUS represents leading global distribution system in the world with a market share of nearly 35%. More than two millions reservations are made daily through this system. This system, which seat is in Madrid and employes over 4.000 people, is present in all countries of Central, East and Southeast Europe.

Next leader in the group of global distribution systems is PEGASUS SOLUTIONS, which was founded in 1989 in Dalas. This company is the biggest in the world for representing hotels, with the biggest reservation system for e-booking. PEGASUS provides the Internet and GDS distribution for more than 60.000 hotels, of which 40% is located beyond American region. Except the company's seat in Dalas, it has representative offices in 12 countries and employes more than 1.200 people.⁷

4 Ibidem

5 Ibidem

6 Ibidem

7 Ibidem



When on line hotel reservations are concerned, WorldRes is the leader. This network uses the most suitable technology to provide alternative to hotel reservation services, which depend on GDS and other systems, operating with lower costs. With the Internet connection everyone can join this system, from the great international hotel chains to small independent hotels. This system offers effective, cheap and simply way to promote and sell accommodation via the Internet. Hotels don't have any costs for access to this system, but WorldRes takes 10% commission for each reservation made on its web site or 4% for reservation made on hotel web site. This system has more than 40.000 members, and membership in this system is not exclusive, what makes access available although members are already participating in some other system.⁸

Comparing with airline companies and touroperators, hospitality formed its own system much later, while nowadays it is almost impossible to imagine business of any contemporary hotel without having its own system or getting involved with some of existing reservation systems. The first computer reservation system in hospitality was HOLIDEX and it was implemented in late 80s of the last century, in Holiday Inn hotels. Later on, this system was also used in Ramada, Marriott, Intercontinental, Hilton, Sheraton hotels etc.(Barjaktarovic, D., 2013.p.244).

Advantages of information technologies implementation

Tourism, as well as hospitality, took global character long time ago. Global trends in hospitality are manifested through special expansion and regionalisation, standardisation, computerisation, segmentation, diversification and specialization. Opportunities for success in the market are increasing by inovations implementation, and one of the key factors of innovative management implementation is communication aspect. Learning through inovations implementation is critical factor of success in a development of new products in hospitality. This approach enables learning from mistakes (Cerovic, S., Petrovic, P., 2005.p.21).

Tourism, as an economic activity and a part of world industry, is getting new possibilities of supply growth and expansion, as well as international networking due to the implementation of information technology. Some advantages of IT implementation are manifested in:(Cacic, K., 2010.p.311)

- ◆ Providing more information in time unit, which results in greater productivity of related operations in a company
- ◆ Possibility of getting information with lower costs, which impacts on higher cost-effectiveness
- ◆ Helping big and decentralized companies to use information efficiently in smaller sectors, as well as their feedback, i.e. informative integration of a big company
- ◆ Enables optimal decision making and better control of company plans and actions implementation etc.

IT application enables huge on line consumer base, which leads to more intensive competitiveness in the market. Unavoidable supply expansion in the tourist market is a result of new demand and service diversification.

Advantage of IT application is in international merging, which represents connecting through activities and supply of leading operators in a region or in the world, and functional or proprietary connection and involving with international chains and networks (Hilton, Sheraton, Intercontinental etc.). One of the most important IT potentials is a possibility of skipping special technological phases in a development, which results in technological gap reduction.(Petrovic, P., Antevski, M., 2007.p.7)

Integration of information and business systems brings not only direct savings in special resources and in time needed for some operations, but also enables series of new and improved services based on a web. This provides service improved quality and more flexibility, making extra competitive advantage and higher profit that way.(7)

Hotel company has to identify all consumer segments, to determine their preferred services and in what range are being consumed, as well as to determine distribution channels that consumers use the most frequent and motives for buying services. All these information are necessary so that promotion activities, distribution channels, service types and prices can be adjusted to each segment. It is necessary to know the rate of guest returnemets and the amount of money that is being spent daily, for each market segment, for the period of their staying in a hotel (Zecevic, B., Djordjevic, A., 2005.p.55).

Modern communication solutions provide new services that are new source of incomes. On line paying systems bring numerous advantages, from a faster and simplified selling process for service consumers, to simplified charging for service providers. Automated processes directly lead to downtime reduction in hotel business which results in cost reduction and removal of possible mistakes in time. All that leads to higher service quality and profit increase as a result. IT application makes operating faster and simpler, which leads to business improvement with service price dropping. Implementation of modern ICT, in combination with efficient management and educated and trained staff, is necessary when future investments in tourism development are concerned.

Control shouldn't be process that is in progress unplanned, but it must be a part of business philosophy that implies constant perceiving of observed changes in external and internal surrounding, observing deviations and reacting in time (Kotler, P., Bowen, J., Makens, J., 1999.p.34). The simplest way for hotel companies to measure quality level is to implement monitoring system, i.e. monitoring of guests complaints, so they can find out what makes guest dissatisfied and to make required corrections in time.



RESEARCH RESULTS AND ANALYSIS OF THE ROLE OF INFORMATION SYSTEMS SUPPORT TO THE HOSPITALITY MANAGEMENT OF NOVI SAD

Business of hotel industry in Novi Sad

Hotel companies are one of the most important holders of tourist supply in specific destination. Hotel company offers wide range of various services, so therefore it can be said that hotel product represents set of various products and services. It is almost impossible to measure quality and usefulness of provided services, and that is the result of services intangibility. Regarding hotels in Novi Sad, assortment and quality forming, with the aim to provide adjustment to demands and changes in tourist market, is of crucial importance.

This process has to be followed by strategic improvement of sale and promotion activities, successful hotel positioning and high level of competitiveness in tourist market. Great importance have promotion, price and sale channels, as marketing mix instruments, which are directed to the improvement of the overall market presentation of hotels in Novi Sad in variable tourist market. The main parts of accommodation supply are hotels and similarly capacities, so therefore they get big attention and are in connection with forms of successful trends following in the market. Tourist and hotel companies are continuously customizing market trends in the field of tourism. From the aspect of management, mentioned forms of customization require operations that regard preparation and maintenance of the overall service programme. The main direction of tourist company customization implies: adaptivity, enterprise and tendency towards creativity.

Hotel companies create service that has to be different and able for constant differentiation until high level of consumer satisfaction is provided, since they have to experience it like unique and better than the other offers. Usually, hotels are expected to provide following: (Cerovic, S., 2009.p.47).

- ◆ High – tech equipped rooms
- ◆ Improved safety and security during the stay
- ◆ Non-smoking rooms as a standard
- ◆ Environmental awareness
- ◆ Informal and healthy food
- ◆ Different types of hotel restaurants
- ◆ Different types of entertainment, recreation, etc.

Business success of tourist industry in Novi Sad can be analyzed and measured in different ways, but always concerning global social reality in the country and in the world, especially in those parts of Serbia and foreign countries with the most income tourists. With the aim of giving closer picture of tourist industry business in Novi Sad, following indicators are used:

Share of the overall number of overnights in Novi Sad in 2012 was 231.289, what makes 3.5% in comparison with the number of overnights in Serbia in the same year. When foreign tourists are concerned, they made 151.444

overnights in Novi Sad, what makes 8.5% in comparison with the number of overnights in Serbia in the same year. On the basis of indicators regarding foreign tourists' overnights, it is possible to present approximate foreign currency income in Novi Sad in 2012. Concerning that foreign currency income from tourism in Serbia in 2012 was 906.127 USD, as well as percentage share of foreign tourists' overnights in Novi Sad of 8.5% in comparison with the number of the overnights in Serbia in the same year, we come to data that foreign currency income from tourism in Novi Sad in 2012 was about 72.500 USD.⁹

Structure of accommodation capacities in Novi Sad is various and at satisfactory level. Except 27 categorized accommodation units, from 1* to 5*, there are also 30 uncategorized units, while the overall accommodation capacity of the city is 3.788 beds.¹⁰

According to data of the National Bureau of Statistics, there were about 100.000 arrivals in Novi Sad in 2008 (45.000 were foreign tourists) and about 185.000 overnights (foreign tourists' overnights about 95.000) in the same year.¹¹

Next year was crisis for tourism, due to the global economic crisis, and therefore tourist traffic was significantly reduced in 2009. Following years had increasing tendency of tourist traffic, so in 2012 were 114.013 tourists.

Novi Sad has 57 accommodation objects, from which 26 are hotels¹² categorized from 1* to 5*. The following are table and graphic presentations of tourist arrivals and overnights, as well as capacity utilization in some hotels, categorized from 3* to 5*.

TABLE 1: ARRIVALS AND OVERNIGHTS IN NOVI SAD IN PERIOD 2008-2012.

Year	ARRIVALS			OVERNIGHTS			Approximate stay
	Total	Domestic	Foreign	Total	Domestic	Foreign	
2008	100.000	55.000	45.000	185.000	90.000	95.000	1,85
2009	83.981	39.606	44.375	161.709	65.024	96.685	1,93
2010	92.620	41.870	50.750	168.347	68.181	100.166	1,82
2011	106.433	43.422	63.011	213.549	70.926	142.623	2,01
2012*	114.013	48.323	65.690	231.289	79.845	151.444	2,03

Source: Statistical Yearbook of the Republic of Serbia, the National Bureau of Statistics, Belgrade, 2011

*data for 2012 are obtained from the reference sector in the the National Bureau of Statistics

*approximate stay is shown in the number of days

9 Due to the lack of exact data from authorized institutions, regarding incomes from tourism in Novi Sad, approximative amount is presented in this paper. The amount was calculated according to own calculations, using comparative method for the ratio of tourist traffic in Novi Sad to the tourist traffic in Serbia in 2012.

10 Source: the reference sector in the the National Bureau of Statistics

11 The real number of tourists is significantly greater, concerning that many visitors are not registrated as tourists (visitors at the Fair of Agriculture, EXIT festivals, ship visits, etc.)

12 Source: the reference sector in the the National Bureau of Statistics



Table 2: Arrivals and overnights in the hotels in Novi Sad included in the research in 2012

Hotel	Arrivals	Overnights	Capacity utilization
Best Western Prezident *****	8.321	10.855	63%
Park *****	14.651	33.676	30%
Centar ****	7.170	15.420	56%
Sajam ***	2.193	4.238	22%
Novi Sad ****	14.400	25.684	48%

Source: Statistical hotel reports in 2012

According to data from the table above, we came to the conclusion that majority of hotels in Novi Sad operate with insufficient capacity utilization – less than 60%. The maximum capacity utilization is observed in Best Western Prezident ***** hotel, 63%, while the minimum has Sajam hotel*** 22%.

Criteria for analysing hotels as the basic type of accommodation objects, is based on the fact that Novi Sad, as business, cultural, sport, geostrategic, administrative and political city, represents important source of the overall tourism in Serbia.

TABLE 3: HOTELS IN NOVI SAD INCLUDED IN THE RESEARCH

Name	Category	Capacity (rooms / beds)	Emplo yees	Year of construction	Note
Best Western Prezident Hotel	*****	46 / 65	43	2009.	Business hotel
Park Hotel	*****	227 / 438	158	1964.	Privatized;Renovated 2004.
Centar Hotel	****	51 / 72	13	2010.	Business hotel
Novi Sad Hotel	****	111 / 220	50	1981.	Privatized;Renovated 2007 - 2013.
Sajam Hotel	***	71 / 139	25	1971.	Privatized;Renovated 2005.

Source: Statistical hotel reports in 2012

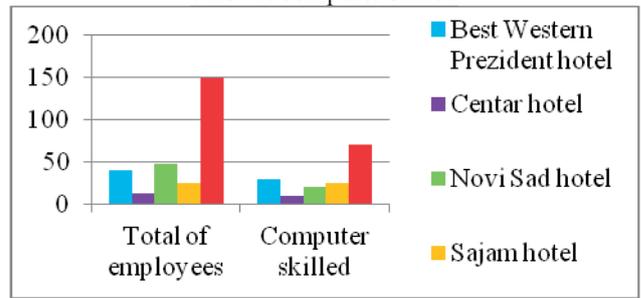
Research results

Results related with the analysis of the role of information systems support to the hospitality management in Novi Sad, are based on the research conducted in five hotels in Novi Sad (Centar**** hotel, Park***** hotel, Sajam*** hotel, Novi Sad**** hotel, Prezident Best Western***** hotel). Data were collected by survey method, using questionnaire as the instrument for collecting data. Results interpretation is presented textual and in graphics. It is necessary to emphasize the fact that data sources, their structure and range, are limiting credibility of the presented results.

The level of a computer skills of the employees in hotel industry in Novi Sad

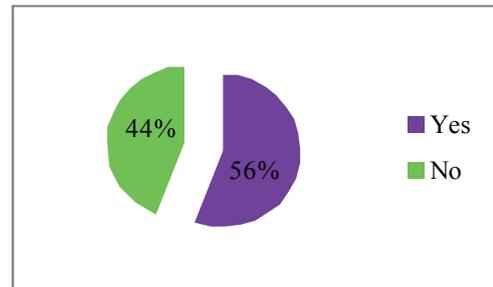
The ratio of the total of employees, in five mentioned hotels in Novi Sad, to those who are computer skilled, is unsatisfactory, due to the fact that only 56% of the total employees are computer literated and computer skilled. The biggest deviations are observed in Park***** hotel and Novi Sad**** hotel.

Chart 1: The ratio of the total of employees in hotels to those who are computer skilled



Source: own research

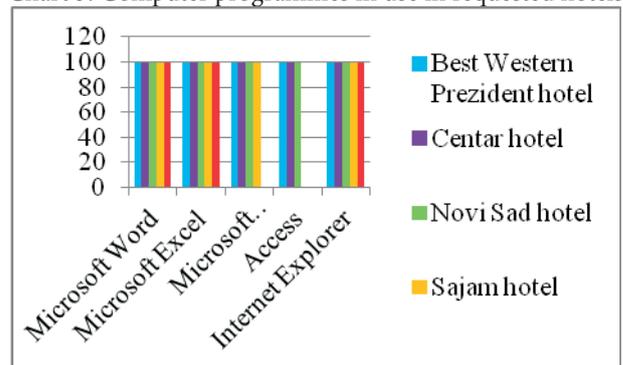
Chart 2: Percentage share of computer skilled employees in a hotel



Source: Own research

According to computer programmes that are in use in requested hotels, it is possible to determine the intermediate level of employees’ computer skill, which is concerning only one-sided computer literacy. In a favour of this conclusion, those computer programmes are basic programmes for textual and numerical data processing, and for the Internet browsing, while none of the mentioned hotels do not use any programme for creating data base, etc.

Chart 3: Computer programmes in use in requested hotels



Source: Own research

Data that might be alerting is that in two from five hotels doesn’t exist qualified person for computer operating and maintenance. Concerning that only about one half of the total of employees is computer skilled, at intermediate level, as well as the necessity of information technologies implementation in everyday hotel business, lack of personnel with special IT education is a problem that should be solved as soon as possible. Keeping in mind previously mentioned situation, the fact that in all five hotels man-

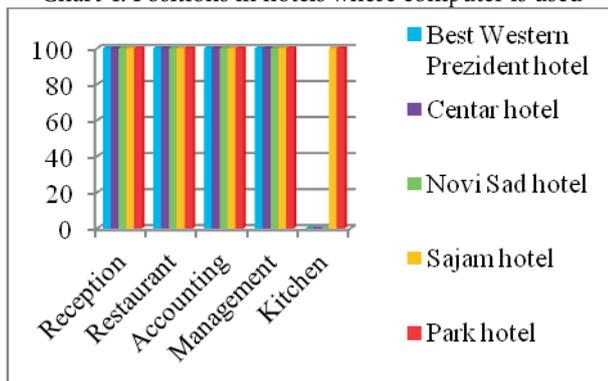


agement attitude is that the level of information technology use in the hotel is satisfying, as well as that there is no need for its improvement at the moment, is alluring.

Conditions quality for information technology implementation in the hotel industry in Novi Sad

In analysed hotels, computer is used at following positions: reception, restaurant, accounting, management and kitchen. Concerning that only in two from five requested hotels, computer is used in the kitchen, its implementation is suggested with the aim of better connection with the other hotel sectors, and at the first place with the restaurant. This would result in higher level of efficiency and effectiveness in everyday hotel business.

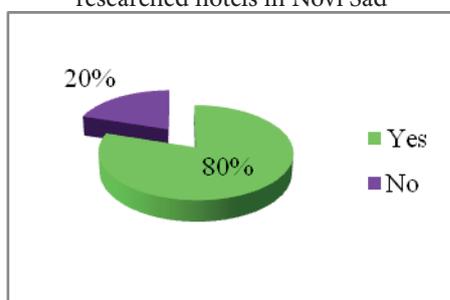
Chart 4: Positions in hotels where computer is used



Source: Own research

Positive fact is that the Internet is used in all five hotels, as well as that guests are able to use it by ADSL or Wireless connection. Through this research it is determined that each hotel has its data bases which are updating regularly (data base regarding guests, accounting, employees, accommodation units, restaurant and additional services). Four from five hotels use only their own data bases, while one hotel, except its own, uses data from other subjects' data bases as well.

Chart 5: Percentage share of hotel information system in researched hotels in Novi Sad

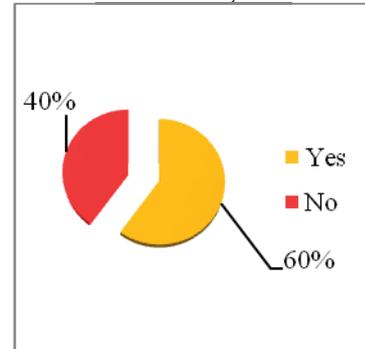


Source: Own research

Internet presentation, as one of the most important elements of information technologies implementation, is present in all five hotels, as well as the possibility of on line reservation. In all requested hotels e-business is used in following operations: sale, documentation exchange, money transfer, payment cards, e-mail and on line conferences. The research results show that 80% of requested hotels have its own hotel information system. Somewhat

worse situation regards hotel involvement in some central reservation system, where ratio is 60%. This picture is partial result of previously presented results (low level of employees' computer skills, insufficiently computer educated personnel, low level of awareness for the necessity of hotels involvement in central reservation systems, etc.)

Chart 6: Percentage of hotels that are part of some central reservation system



Source: Own research

In three from five analyzed hotels, what is 60%, partial implementation of Smart room control is present, i.e. Smart room system implementation. This partial implementation regards only few segments of this system: card key, electric power and water control in rooms, SOS alerts, while air conditioning, and many other segments that smart room control provides, are not regulated by this system. In other two hotels smart room system is not implemented at all, even not in card key implementation.

Even though smart room system is a new trend, and there are numerous lacks and problems in requested hotels that have higher priority, the advantage of this system implementation in hotel business should be observed, due to its advantages mentioned previously.

CONCLUSIONS

Perceiving results of this research, it can be said that information systems implementation in the business of hotel industry in Novi Sad is at satisfactory level, but further improvements in this terms are necessary. The role of information systems in the hotel management in Novi Sad is important, but possibilities of their implementation in hotel business are insufficiently used. According to these facts, it can be concluded that implementation of information technologies in the hotel business in Novi Sad is at satisfactory level, but its potentials are insufficiently used.

Considering the fact that the Internet is the most important platform of e-commerce, as well as that its use as the main communication channel, which enables costs reduction and consumers number increase at the same time, encouraging picture gives the data that all requested hotels use the Internet, as well as that all five hotels have internet presentation and the possibility of on line reservation.

When hotel information systems are concerned, the situation is satisfying, considering the fact that 80% of requested hotels have its information system. On the other



hand, situation regarding hotels involvement in central reservation systems is not convenient, considering that only 60% of requested hotels are involved with some CRS. With the aim of changing this picture, it is necessary to raise hotel management awareness about importance of hotels involvement in CRS.

Considering that Novi Sad is one of the leading tourist centres in Serbia, as well as this city pin its hopes on tourism and puts a lot of effort into it, as one of the main economies in the region, it is devastating that only 56% of the total of employees in requested hotels is computer skilled, and that their computer literacy is one-sided and implies only basic programmes use.

With the aim of facilitating the management of hotel business and improving the presentation of Novi Sad in tourism market, it is necessary to provide additional improvement in employees' education as well as in continuous monitoring of the global trends in information technology implementation in hotel business. Considering that computer literacy and computer skills of the employees are important requirements for successful implementation of information technologies in hotels, additional education of employees is suggested.

Insufficient computer literacy and lack of information technology implementation might have negative effects on hotel business, which directly impacts hotel industry position in wider tourist market. Potentials, opportunities and strengths that Novi Sad has, must be enhanced with information culture development, because high level of ICT implementation is one of the requirements for the involvement of hotel industry in European integrations.

LITERATURE

- [1] Rakov, V. A., and M. A. Uman (2003), *Lightning: Physics and Effects*, Cambridge Univ. Press, New York.
- [2] Bakic, O., 2008, *Marketing in tourism*, Singidunum University, Belgrade
- [3] Barjaktarovic, D., 2013, *Quality management in hospitality*, Singidunum University, Belgrade
- [4] Zecevic, B., Djordjevic, A., 2005, *Marketing control in hotel business*, Hotellink No. 6
- [5] Reports from the reference sector in the the National Bureau of Statistics, 2013, Belgrade
- [6] Jovanovic, V., Djurdjev, B., et al, 2012, *Geographic information systems*, University of Novi Sad and Singidunum University in Belgrade, Belgrade
- [7] Koncar, J., 2003, *Electronic commerce*, University of Novi Sad, Faculty of Economy in Subotica, Novi Sad
- [8] Kosar, Lj., 2008, *Hospitality I*, College of professional studies, Belgrade
- [9] Kotler, P., Bowen, J., Makens, J., 1999, *Marketing for Hospitality and tourism*, Prentice Hall
- [10] Milicevic, V., 2003, *Strategic Management Accounting*, Faculty of Economy in Belgrade, Belgrade
- [11] Njegus, A., 2009, *Business information systems*, Singidunum University, Belgrade
- [12] Njegus, A., 2010, *Information systems in tourism*, Singidunum University, Belgrade
- [13] Njegus, A., Lecture notes, *Geographic information systems*, June 2013, Singidunum University, Belgrade
- [14] Petrovic, P., Antevski, M., 2007, *Information and communication technology and human capital*, Scientific Journal, The College of Hotel Management, Belgrade
- [15] *Statistical Yearbook of the Republic of Serbia*, 2011, The National Bureau of Statistics, Belgrade
- [16] Statistical hotel reports for 2012, Novi Sad
- [17] Stojanovic, N., Svorcan, N., 2007, *Implementation and importance of the Internet in modern hotel industry*, Scientific Journal, The College of Hotel Management, Belgrade
- [18] Spasic, V., 2003, *Transfer technology as developing strategy for companies in tourism*, Copyright edition, Belgrade
- [19] Unkovic, S., Zecevic, B., 2006, *Economics of Tourism*, Publishing Center of the Faculty of Economics in Belgrade, Belgrade
- [20] Cacic, K., 2010., *Business hotel companies*, Singidunum University, Belgrade
- [21] Cerovic, S., Petrovic, P., 2005, *Possibility of innovations – key success factor in European and global hotel industry*, Hotellink No.6
- [22] Cerovic, S., 2009, *Strategic management in tourism*, Singidunum University, Belgrade
- [23] www.znanje.org
- [24] www.racunalo.com
- [25] www.hotelparkns.com
- [26] www.prezidenthotel.com
- [27] www.hotel-centar.rs
- [28] www.hotelnovisad.co.rs
- [29] www.hotelsajam.co.rs