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APPLICATION OF THE INFORMATION TECHNOLOGY IN THE HOTEL INDUSTRY

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The hotel industry is a specific branch of management. In the hotel industry today, the information technology has a major value for the future development of Croatian hotel industry. The place and the function of the information technology in the business strategy of the hotel enterprise determines its accomplishment, success and competition factor in the world market. The strategy of development of new information technology in the hotel management business is the principal factor of business strategy of each hotel enterprise. The large number of data in the hotel information system must be analyzed and changed into "true knowledge" and all this is not possible without existence of professional hotel management. Hotel management utilizes the information technology in order to improve the possibilities of decision making and to increase the guest satisfaction. The hotel management is successful if a high quality hotel product and the maximum profit are realized.

Key words: hotel industry, information technology, hotel information system, hotel management.

INTRODUCTION

The information technology represents the unity of microelectronics, computers, telecommunications and software, which enables the entry, processing and transfer of information.¹ The information technology is one of the key generic technologies, which penetrates all spheres of economy, science, social and political life, introducing some radical changes to all fields.

The information development and the application of modern information technology had a significant impact on the tourist and the entire hotel industry of developed parts of the world. There are two notable tendencies of specific significance:²

- expansive growth of the tourist and hotel industry (the experts agree that the tourist industry represents the largest sector in the world trade and that it shows the highest potential for a sudden growth, whilst some projections indicate that the tourist and hotel industry would become the biggest world industry of 21st century);

¹ Čerić, V., et.al., Poslovno računarstvo, Znak, Zagreb, 1998, p. 5.

² Dean, C., et.al., Information Systems and Technology, PWS-KENT, Boston, 1992., p. 58.

- influence of a sudden development of the information technologies on the world economic and social movements. The impact of new technologies occurs in all sectors of the economy. The impact has changed and will continue to change the hotel industry of developed countries through further acceptance of communication techniques, modern information systems and other. The analyses of changes in the hotel industry imply that one of the most important changes in the hotel processes is precisely the development of information technology. The computers are in wide use for the reservations, creation of invoices, payment, room status reviews, the communication with guests, business partners and coworkers, etc.

Due to these tendencies, almost all subjects in the hotel industry of today in all countries use computers in their business. The parallel development of telecommunications has provided for mutual networking of computers (Intranet and Extranet applications). To maintain the competitiveness as well as to achieve the long-term aims that our country expects from the hotel industry, our hotels should join in such development trends in the world.

Accelerated changes of external business conditions, intensifying of economic criteria, frequent regulation changes, modern systems of calculation, etc. require fast business reactions which could be backed up only by modern, computer based, information hotel systems with inventive and creative hotel management.

1. CHALLENGES OF THE HOTEL BUSINESS

A hotel enterprise is a complex, dynamic, stochastic and open business system, which have to be managed. The managing includes decision making and execution with the aim to direct the business system towards the optimal functioning in accordance with an earlier set goal.³ The successful management of a hotel enterprise represents the complex process that requires significant level of qualifications and skills, arising from the hotel industry characteristics.

The hotel industry characteristics are the following:

- the hotel industry is work intensive activity,
- the processes of production and consumption overlap and it is difficult to separate the attention from the offer,
- the product heterogeneity makes the maintaining of a certain quality level more difficult,
- the seasonal profitability, etc.

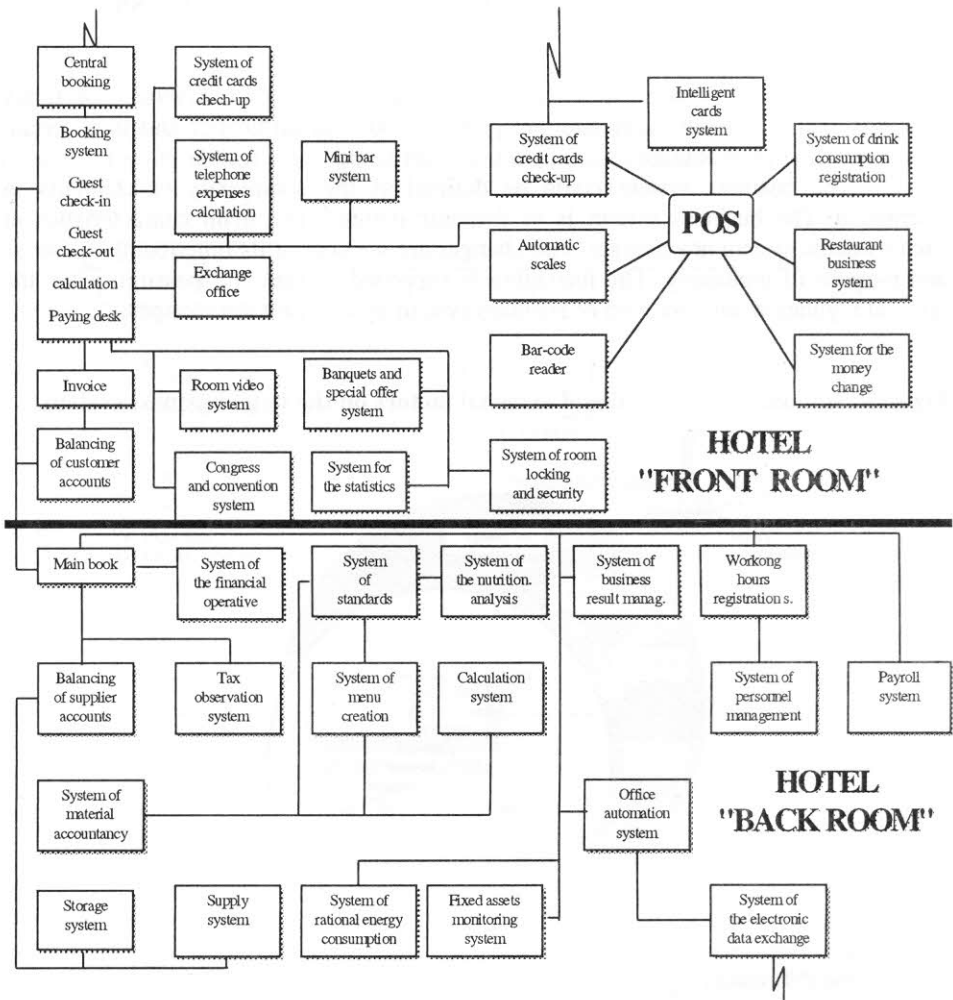
It can also be added that the hotel product is impalpable, it is almost never a wholesome product, etc.

³ Petković, M., Informatička podrška pripreme informacija za hotelski menadžment, Proceedings, Razvojni resursi i suvremeni management u hotelijerstvu, University of Rijeka, Faculty of Tourism and Hospitality Management, Opatija, Croatian Association of Hotel-managers, RRIF, Opatija, 1993., p. 84.

The hotel business is an information intensive activity. Therefore, the information technology becomes a strategic resource that could help the hotel to achieve the decisive advantage on the market. It is important that the strategy of application of the information technology is in service of strategy of hotel business.

Some *new programs have been introduced in hotels* (program of small attentions, various VIP treatments, programs that affect increased satisfaction of the guests), as well as the information systems for the "back room" and the "front room" activities especially when there are local, national and international networks for information transfer (LAN - Local Area Network, WAN - Wide Area Network).

Figure 1. Model of the entire applicable hotel support



Source: Petković, M., *Reinženjering hotelskih informacijskih sustava*, Infotrend, 58/5, 1997., p. 65.

The "**back room**" activities include the entire computerization of all business activities within a hotel enterprise (accountancy, finances, personnel records, etc.). The "**front room**" activities enable linking of the hotel enterprise through the elements of marketing mix with the market environment through the information technology.

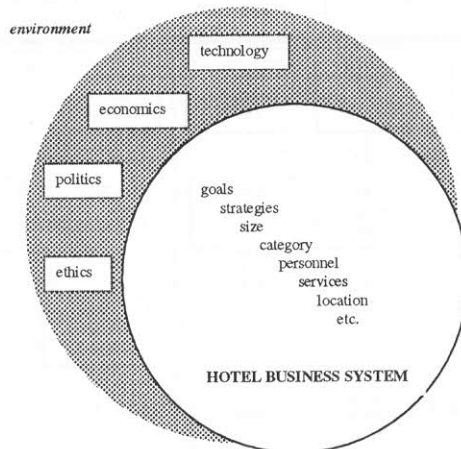
It is essential that all areas of operations are included, and that all employees, to the given level of authorisation, are allowed access to the Database in order to fulfill their task of satisfying and pleasing the guest. The proper functioning of business applications will result in the quality performance of the hotel system and the efficient monitoring of performance indicators for internal and external use.

2. THE STRATEGIC PLAN OF THE BUSINESS SYSTEM AS A PREREQUISITE OF THE INFORMATION PROCESS DEVELOPMENT

A *business system* is a settled and easily surveyed wholeness of many elements, which mutually correlate, are prone to external influences and in a certain way affect their environment.

The business system could be defined as the complexity of elements in interaction. The business system is of dynamic nature.⁴ The main characteristics of each dynamic system are changes. The changes are the core of its functioning, its sense and purpose of managing. The managing is supposed to seek the possibility for the optimal regulation and direction of business system by studying the changes.

Figure 2. Influence of internal and external factors on the hotel business system



Source: Authors' elaboration

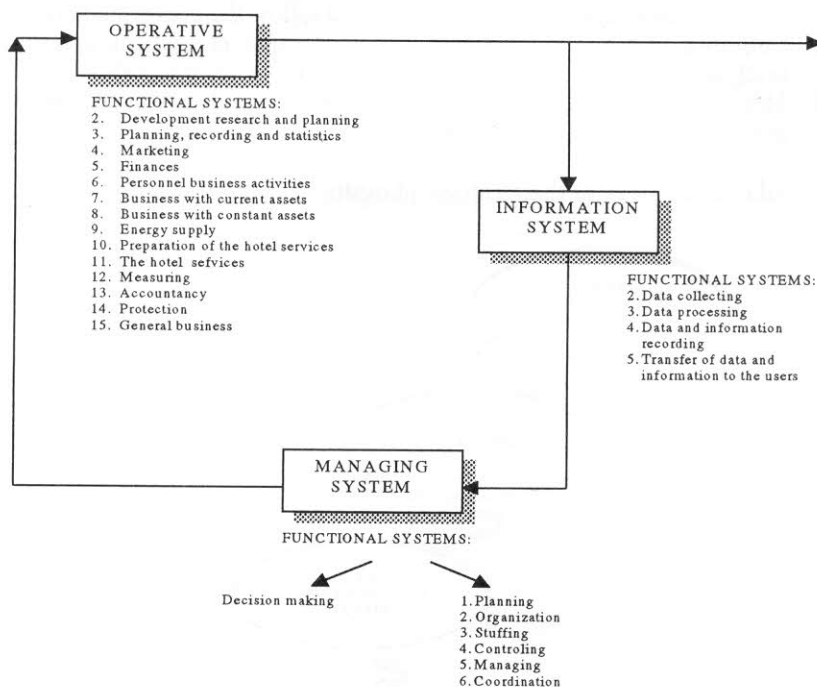
⁴ Österle, H., *Business in the Information Age*, Springer, Berlin, 1995., p. 23.

There are many factors that directly or indirectly affect the hotel business system. Those factors can be classified in two groups:⁵

- Internal factors (goals and strategies of the hotel, size, category and type of the hotel, hotel technology, personnel, structure of hotel services, hotel location, etc.). The hotel management must correctly and timely influence these factors, take actions and measures in order to avoid unwanted occurrences yet to make usage of favorable ones.
- External factors (technological, economic, social, political and ethnic environment). These factors have a great impact on the hotel business system. The hotel management cannot make any influence on these factors but it has to learn about them and adopt its activities to them.

The prerequisite of information analysis and the strategic plan of information process development is the strategic plan of *hotel business system*. Each business system can be observed through three main sub-systems: *production, information and managing sub-system*. In this context the information sub-system provides the information, which enable the managing sub-system to make decisions for managing of the production sub-system.

Figure 3. Fundamental elements of the hotel business system



Source: Biljan August, M., et al., Information Infrastructure for the implementation of the Statistical Process Control System in Hotel Enterprises, Proceedings, Economics and Ecology in Function of Tourism Development, University of Rijeka, Faculty of Tourism and Hospitality Management, Opatija, Opatija, 1999., p. 81.

⁵ Elliot, G., et al., Information Systems for Managers, Academic Press, San Diego, 1997, p. 35.

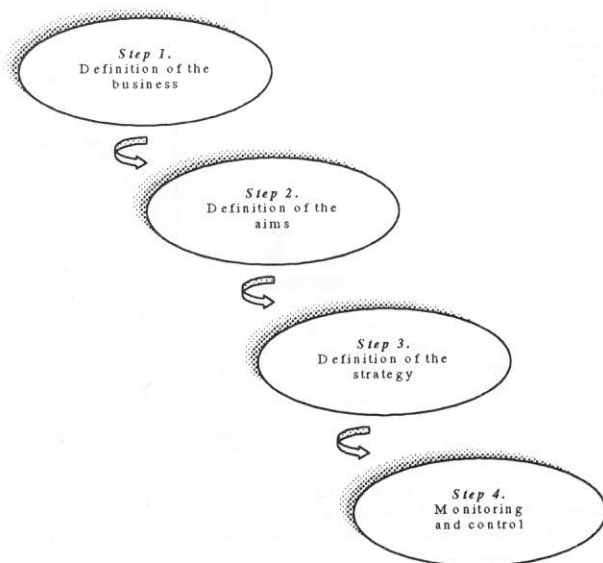
The strategic planning of the hotel enterprise is based on the principle - secure the profit. The successful, market orientated hotel enterprises base their business activities on the marketing function. Therefore, the strategic planning of business systems of such enterprises has to begin with the analysis of so-called marketing triangle: *customers - competition - offer*. The examples of the question for which such analysis should provide the answers are:

- Why are guests coming to our hotels?
- Who are our customers?
- Who is our competition?
- Which are our disadvantages?
- Which are our advantages?
- How the answers to these questions change through seasons?, etc.

The answers to these questions are achieved in the fundamental steps of the strategic planning:

- 1) Definition of the business (what are we now, what we want to be, which is our aimed market, which requirements of that market we aim to fulfill, with which products and services we intend to realize that, which are our distribution channels, which are our competitive advantages, what is our fundamental strategy, etc.)
- 2) Definition of the hotel business system aims (it is necessary to quantify the goals and establish the measures that could follow the goal realization)
- 3) Definition of the strategy (determination of a market segment, investment level, resources that would strengthen competitive advantages)
- 4) Monitoring and control (measuring and control, result diagnosis, "what if" analysis of decisions and the corrective action definition).

Figure 4. Fundamental steps of the strategic planning



Source: Authors' elaboration

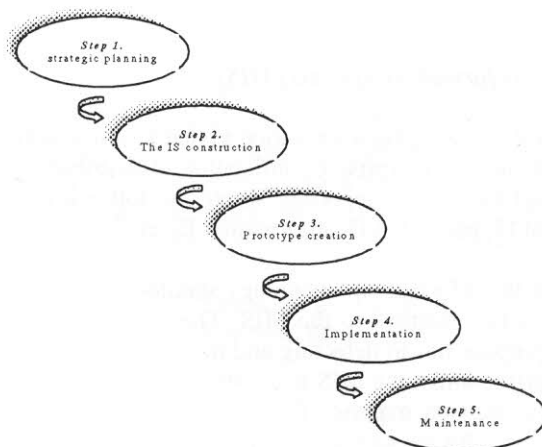
The business sub-systems and the criteria for creation of the term plan of information sub-system, which should support defined business sub-systems, are defined based on the strategic plan of the hotel business system, which defines wanted goals, critical factors of the success, data types and basic functions.

The build of the information sub-systems is performed in the sectors and priorities that are brought on the strategic level.⁶ It is necessary to establish the information flows on all levels of management in the hotel (which data should be recorded, in which sectors, determine the relations between particular data), perform the analysis of the existing information system (availability of hardware, software, org-ware, human-ware and net-ware). Due to complexity of specified job, the engagement of all hotel's own potentials is recommended in the combination with recognized national or international consulting companies.

There are few steps within the modeling of the hotel information system:

- Step 1. - The strategic planning of the information system (creation of information system strategy, noting and planning the development wholeness)
- Step 2. - The information system construction (the aim is to build a model that would be a base for the system development)
- Step 3. - Creation of the prototype (previously defined program modules are being programmed in this phase)
- Step 4. - Implementation (introduction of the new information system, a thorough check up is required before the final introduction)
- Step 5. - Maintenance (improvement of the information system in order to correct faultiness that were noted during work or in order to adjust the system to some new created changes of the hotel business system i.e. to some new information requirements)

Figure 5. Steps in the creation of the hotel information system



Source: Authors' elaboration

⁶ Strahonja, V., et.al., Projektiranje informacijskih sustava, Hrvatska informatička zajednica Zagreb, INA, INFO Zagreb, Zagreb, 1992., p. 34.

3. CONTENTS AND SIGNIFICANCE OF THE INFORMATION TECHNOLOGY IN VARIOUS DEVELOPMENT PHASES

The information technology development is realized through several phases. Most of the phases exist parallel and are based on the lower phase in the hierarchy. The phases are the following:⁷

- Transaction Processing Systems - TPS
- Management Information Systems - MIS
- Manager Support Systems that consist of:
 - Decision Support Systems - DSS
 - Group Decision Support Systems - GDSS
 - Expert Systems - ES
 - Executive Support Systems - ESS
- Office Information Systems - OAS

Transaction Processing Systems (TPS)

These systems serve as a support to the current business activities, i.e. for the management of everyday routine business transactions. The basic functions of the system are recording, documents issuing and reporting. In the hotel, this system is responsible for the preparation, processing, transmission and acceptance of orders, creating invoices, payrolls, monitoring the reserves, managing the sales, etc. The build of information system begins with the build of its transaction segment. However, it should be emphasized that many hotel enterprises did not go further from the phase of transaction processing in the improvement of their information system.

Management Information Systems (MIS)

This is a phase of managing information systems, which solve problems of the operative management in the enterprise by utilization of distribution data entry at the spot of its creation and by flexible reporting where the following sub-systems occur: marketing IS, financial IS, personnel IS, information IS, etc.⁸

Viewed from the information technology standpoint, it should be emphasized that the TPS system is not identical to the MIS. The TPS is not directed toward the decision making. Its purpose lies in detecting and managing of the data which relate to business of the enterprise, whilst the MIS is constructed as a managerial tool aimed to support the process of decision making. The MIS consists of Database Management System - DBMS. That is software with the possibility to create, utilize and maintain the databases.

⁷ Sikavica, P., et al., Poslovno odlučivanje, Informator, Zagreb, 1994., p. 186.

⁸ MacLeod, R., Management Information Systems, Macmillan, New York, 1993., p. 427.

Decision Support Systems (DSS)

These systems refer to the system types which support the decision making process. They appeared during the middle of 1970-ties. On the contrary to the MIS, which supports solving of the structural problems, these systems help managers to make qualitative decisions on the non-structural problems of decision making (assistance in solving the problem areas in decision making which do not occur every day, are not routine nor well known).⁹ The system has installed flexibility mechanisms that help in purpose adjusting and therefore, it could answer to the changes in the decision making procedures. With the DSS systems the emphasis is not that much set on the efficiency of the data processing as on supplying the managers with the correct information.

Group Decision Support System (GDSS)

These systems are created through the expansion of the decision making support system through special communication means of type "man - computer - man" in order to support decision making of a group of managers. Their purpose is to help decision makers in the enterprise in easier solving of problem situations which were not structured well. They are constructed in order to support the mutual process of decision making of a group of people. There are many reasons for the occurrence of the GDSS, but the most fundamental is the fact that, regardless of the existing hierarchy, the most often decision maker in modern corporations is a group of adequate executives, managers and their advisers. There are the GDSS for the special purposes - for solving of only one type of problem and the GDSS for general purpose - for various forms and types of organizational decision making in a group of managers.

Expert Systems (ES)

These are the computer programs, which are based on the knowledge in the expert fields. They achieve the quality and efficiency in the experts' judgment in that field and assist in solving of problems. The ES belong to the field of artificial intelligence, a branch of the computer sciences that studies development of the programs that imitate human intelligence skills. In solving the problems, the ES utilize the knowledge and judgment. One of the basic characteristics of the system is their ability to explain the method that brought them to the solution of the problem. They consist of a knowledge base, a fact base, an inference base and the users' interface that enables simple communication of user with the ES.

Executive Support System (ESS)

The ESS is the newest type of the information systems for the decision making support. These computer based systems are compatible with the managerial

⁹ Anand, S., et.al., Decision Support Using Data Mining, Financial Times Management, London, 1998, p. 63.

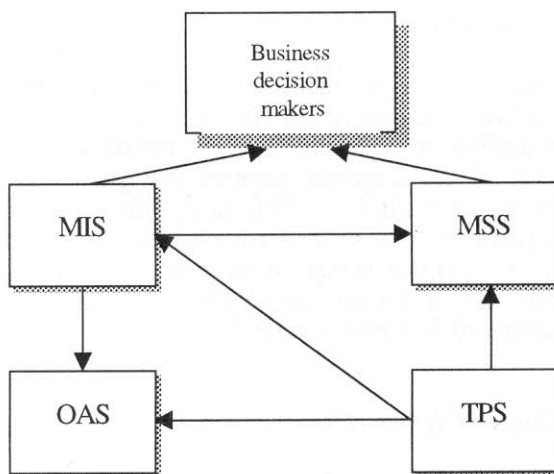
status and the responsibilities of the top management. They are support to managers in the specific requirements for information in order to make strategic decisions in the hotel enterprise. The ESS have to be constructed by respecting the following five characteristics of the business decision making process:

- non-structuring of most of the decisions
- a high level of uncertainty
- direction toward the future
- informal sources of informing
- higher generalization of required information

Office Information System (OAS)

The OAS is a special part of the information system that involves various utilization of the information technology in the office business. The system encompasses computers and programs for the requirements and processing of documents and messages (text processing, e-mail, etc.). It serves to manager's needs at all levels of decision making in the enterprise. The introduction of the modern information technology into offices has in a great part improved the office work (automation of the office, department accountancy, etc.) This system consists of a range of various technologies that could be classified in the following groups: T document processing (copying, text processing, picture processing, etc.) T communications (e-mail, telex, etc.), T teleconference (audio and video conferences, work at home, etc.) T supporting systems (support to group work, job organizers, etc.).¹⁰

Figure 6. **Business information system**



Source: Authors' elaboration

¹⁰ Čerić, V., et.al., Poslovno računarstvo, Znak, Zagreb, 1998., p. 41.

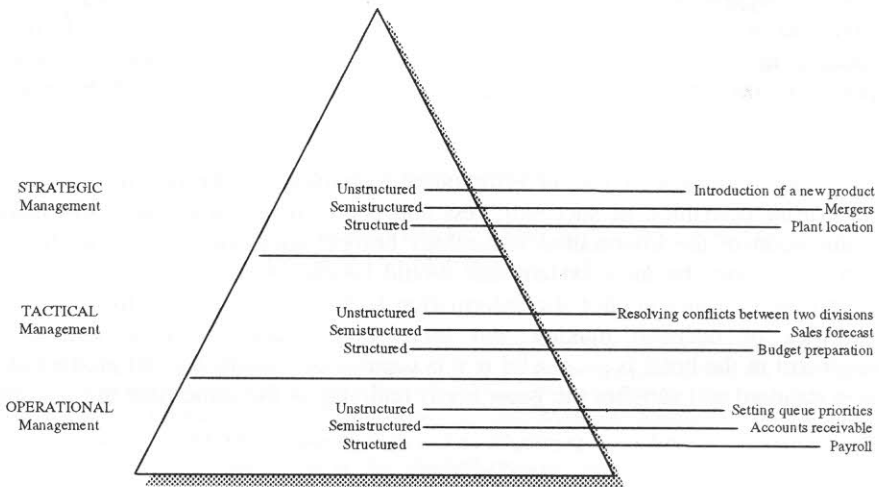
All these various, computer based systems, existing in the enterprise, should be integrated in one entity and directed towards the support to the decision making process, as shown in Figure 6.

4. THE CHARACTERISTICS OF MODERN MANAGER PROGRAMS IN THE HOTEL INDUSTRY

Faster introduction to European and world flows of the market economy requires qualitative, educated and motivated personnel. A good, modern and long-term management program should be capable of training the managers to face the challenges of dynamic world and European environment. The management is expected to understand changes and their managing, to be able to manage organizational structures, have constant will for learning, face the future, possess the inventiveness and initiative related to the technological development, management and usage of the information systems that are becoming more complex, etc.

In the hotel enterprises usually exists three levels of management: strategic management, tactical management and operational management.

Figure 7. Organizational levels and types of decisions.



Source: Bidgoli, H., Modern Information Systems for Managers, Academic Press, San Diego, 1997., p. 12.

Organizational decisions can be classified into three groups. *Structured decisions*, or programmable tasks, do not need a decision maker for implementation. Instead, a well-defined, standard operating procedure exists for the execution of structured decision. Record-keeping operations, payrolls, and simple inventory problems are examples of this type of task.

Semistructured decisions are not defined by standard operating procedures quite as well as structured decision. However, these decisions include structured aspects that greatly benefit from information retrieval, mathematical and statistical models, and information system technology in general. Sales forecasting, cash flow, and capital acquisition analyses are some decision within this group.

Unstructured decision are unique in nature, are mostly nonrecurring, and have no standard operating procedure for their implementation. In these circumstances, the decision maker's intuition plays the most significant role and computer technology offers the last support. The many instances of these types of decisions include research and development, hiring and firing, and introduction of a new product. Future developments in artificial intelligence may be of great assistance to organizations confronted with these types of qualitative decisions.

Figure 7 shows various organizational levels and the types of decisions made at each level. This figure highlights the potential and applications of information technology in all levels of an organization.

CONCLUSION

An approach that would be based on the previous planning of the system development as a wholeness, by using the modern achievements in the computer science, is required for building of that kind of information system, which would directly add to greater business successfulness and rationally utilize information technology in the hotel business activities. The planning of information system, supported by the computer, have to be included in general planning of the business system.

The place and the role of information technology in the business strategy of the enterprise determine its successfulness and competitiveness in the world market. The utilization of the information technology brings significant changes in the hotel system, as an open business system that should be managed. The hotel management creatively utilizes and applies the information technologies in order to improve the possibilities of decision making and increase the satisfaction of guests. The management in the hotel is successful if it is capable of creating a hotel product of the highest standard and satisfies the guest needs realizing at the same time the maximum profit.

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Sažetak

PRIMJENA INFORMACIJSKIH TEHNOLOGIJA U HOTELSKOJ INDUSTRIJI

Hotelska industrija je informacijski intenzivna djelatnost. U suvremenom hotelskom poslovanju informacijska tehnologija ima sustavno značenje za budući razvoj hrvatske hotelske industrije. Mjesto i uloga informacijske tehnologije u poslovnoj strategiji poduzeća određuje njegovu uspješnost i konkurentnost na svjetskom tržištu. Stoga strategija razvoja informacijskog sustava i uvođenje novih informacijskih tehnologija u hotelsko poslovanje postaje bitan sastavni dio poslovne strategije svakog hotelskog poduzeća. "Bogatstvo podataka" u informacijskom sustavu hotela mora biti analizirano i pretvoreno u "pravo znanje", a to sve nije moguće bez postojanja odgovarajućeg hotelskog managementa. Hotelski management kreativno koristi i primjenjuje informacijske tehnologije u cilju poboljšanja mogućnosti donošenja odluka i povećanja zadovoljstva gostiju. Management u hotelu je uspješan ako je sposoban stvoriti hotelski proizvod najviših standarda i zadovoljiti potrebe gostiju uz ostvarenje maksimalnog profita.

Ključne riječi: hotelska industrija, informacijska tehnologija, informacijski sustav hotela, suvremeni hotelski management.

Zusammenfassung

ANWENDUNG DER INFORMIERUNGSTECHNOLOGIE IN DER HOTELINDUSTRIE

Die Hotelindustrie ist eine informatisch gesehen intensive Tätigkeit. In dem modernen Hotelbusiness hat die Informierungstechnologie eine systemwichtige Bedeutung für die zukünftige Entwicklung der Hotelindustrie in Kroatien. Je nach dem Platz und der Rolle der Informierungstechnologie in der Geschäftsstrategie wird der Erfolg und die Konkurrenz jedes Unternehmens auf dem Weltmarkt bestimmt. Demnach stellt die Entwicklungsstrategie der Informierungstechnologie und die Einführung neuer Informierungstechnologien in den Hotelbusiness einen wichtigen Teil in der Geschäftsstrategie jedes Hotelunternehmens dar. "Der Angabereichtum" in dem Hotelinformierungssystem muß in "das wahre Wissen" analysiert und transformiert werden, aber dieses ist ohne Bestehen eines entsprechenden Hotelmanagement nicht möglich. Die Informierungstechnologie wird von dem Hotelmanagement kreativ genutzt und im Ziel einer Möglichkeitsverbesserung beim Entscheidungstreffen und einer Vergrößerung der Gästezufriedenheit angewendet. Das Hotelmanagement ist soweit erfolgreich insofern es fähig ist ein Hotelprodukt nach höchsten Standards zu schaffen und mit maximaler Profitrealisierung die Gästebedürfnisse zufriedenzustellen.

Schlüsselwörter: *Hotelindustrie, Informierungstechnologie, Hotelinformierungssystem, modernes Hotelmanagement.*