

## Information and Communication Technologies education for future professionals in Hotel Management and Tourism Business

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**Abstract:** *Information and Communication Technologies (ICT) are ubiquitous in contemporary business. More than that, all aspects of business highly depend upon computers and digital devices in general. Because of that it is must to include a lot of practical ICT education in all levels of education. This is especially true in higher education that is last step before students enter in business environment. In this paper is given our overview of practical ICT education on teaching course of Information and communication technologies in hotel management and tourism. This could be used as a guideline for practical education in similar teaching courses.*

**Keywords:** *informatics, education, information systems, hotel management systems, practical work*

### 1. INTRODUCTION

Digital devices took advantage on all sorts of modern business. Our everyday life is highly dependent upon these devices as well. All kinds of medical treatments, tourism, business, etc. rely on digital technologies too, e.g. [1] [2] [3]. Information systems are backbone of modern business, and are used for decision making for strategic and tactical planning purposes [4] [5]. All sorts of digital devices are present in modern business as components of various information systems.

Information and communication technologies (ICT) is extended term for the information technologies (IT), which emphasizes the role of unified telecommunications, computer systems, necessary software, information storages and multimedia systems which all together allow access, storage, transmission and processing of information to the users [6]. Information technologies fall under the information systems umbrella-term but deals with the technology involved in the systems themselves. Information technology can be defined as the study, design, implementation, support or management of computer-based information systems.

Impact of ICT across the 30 years has been huge. Although impact of these technologies is huge, education in this field seems to be far less change than other fields have experienced. A number of researchers have explored this lack of activity, e.g. [7] [8].

Education drives every kind of business and social activities. That is why it must be up to date with the of needs of contemporary business and requirements of the society. The usage of information and communication technologies in hotel management and tourism in general is a must. There is virtually no business sector in this field that does not depend on these technologies [6].

In many ways, quality of information and communication technologies education is reduced. Some common factors are lack of funding to support the purchase of the technology, a lack of adequate training among teachers, a lack of motivation among students and teachers e.g. [9] [10].

The education in the field of Informatics at the Faculty for Hotel Management and Tourism in Vrnjačka Banja is realized in two undergraduate academic subjects: Business Informatics (the first year of studies) and Information and Communication Technologies in Hotel Management and Tourism (the fourth year of studies).

Elementary introduction to informatics in general is provided in the course of academic subject Business Informatics. The main objectives of the academic subject Information and Communication Technologies in Hotel Management and Tourism are to prepare students for the specific business environment in the hotel management and tourism industry. Therefore, the key-points of the academic subject Information and Communication Technologies in Hotel Management and Tourism are presented in this paper.

The aim of the academic subject Information and Communication Technologies in Hotel Management and Tourism is to enable students to:

- Understand the role and concept of information and communication technologies,
- Understand basic role and structure of information systems in general,
- Comprehend concept and basic modeling of databases,
- Begin to use some basic web based systems, and
- Understand how management information systems works.

Besides this, very important practical aspects is that a students gain skills in the effective use of information systems used in the field of hotel management and tourism, and the application of that software in everyday business operations. The main managing bodies of the European Union highlighted that innovation and new information technologies have become determining factors to stimulate competitiveness in the European tourism sector [11].

European Commission concluded that innovation and new information technologies have become determining factors for the competitiveness of the tourism industry and for strengthening exchanges with other sectors linked to it. Their use by public and private tourism operators, particularly small and medium-sized enterprises, should be strengthened through awareness-raising and partnership initiatives and appropriate use of various national and European programs. There is also a need to accelerate the integration of information society tools and services into all tourism activities, particularly those carried out by SMEs, and facilitate access for the various tourism operators to the relevant financial instruments.

For stimulation of competitiveness in the European tourism sector, two actions are planned:

- The Commission will launch an 'ICT and tourism' platform for stakeholders to facilitate the adaptation of the tourism sector and its businesses to market developments in new information technologies and improve their competitiveness by making the maximum use of possible synergies between the two sectors.
- In preparing its forthcoming communication on electronic commerce in the internal market, which will assess the implementation of the electronic commerce Directive, the Commission will examine the possibilities for strengthening the integration of the tourism sector in this context.

According to [12], the rise of the Internet has drastically changed the way citizens travel, prepare and book travel arrangements and the way players in the tourism sector do business. ICT usage by households/individuals and by enterprises is very significant. Therefore, education must follow this trend.

According to the data for 2014, the latest data [12], looking at the take up of Internet services related to travel by tourists or by Internet users in general, European Commission mention several findings:

In 2014, rented tourist accommodation was booked online for 55% of the trips made by residents of the European Union.

For just under 1 in 4 tourism trips (24%), transport was booked online. However, for many trips where people travel with their own car no booking (whether online or offline) was needed. In 2014, air travel was predominantly booked online (67%), but travel by train was also booked online for a majority of the trips where railways were the main means of transport (52%).

The age pattern of online booking of rented accommodation and transport was in line with the overall Internet use by age group. The share of online booking decreased slightly for older age groups. However, online booking of rented accommodation tended to be a bit less important for the youngest age group (15 to 24 years), possibly because youngsters may be more inclined to book their rented accommodation on arrival instead of making pre-booked arrangements. As regards air travel, the share of online booking exceeded 75% for the younger age groups (15 to 34 years).

According to the 2015 survey on ICT usage in households and by individuals, 39% of the population (aged 16 to 74) reported having used the Internet for purposes related to travel. When excluding non-Internet users from the analysis and looking only at the relevant sub population of Internet users, half of these had used the Internet for travel purposes.

Within the group of Internet users, the propensity for buying or ordering goods or services online steadily increased from 56% in 2010 to 65% in 2015. A similar pattern was observed for travel related services.

In 2015, 65% of Europeans who used the Internet bought or ordered goods or services online. More than half of those who shopped online (52%, or 34% of all Internet users) bought or ordered holiday accommodation and/or other travel arrangements such as transport tickets or car hire. 40% of those who bought or ordered any goods or services online booked holiday accommodation (or 26% of all Internet users), while 37% bought or ordered other travel arrangements online (or 24% of all Internet users).

If we look at the other side, i.e. if we complement the analysis with data on the supply side - the use of Internet and e-commerce by enterprises, especially on main tourism industry, the accommodation sector, with partial data available for tour operators and travel agencies, it is worth mentioning:

In 2015, 97% of enterprises with 10 or more persons employed had access to the Internet. In the tourist accommodation sector this amounted to 99%.

Websites or home pages are the entry point for e-business. In 2015, 95% of all enterprises in the accommodation sector had a website or homepage, compared with 75% in the whole economy.

With 74% of enterprises providing online ordering or reservation or booking through their website, the accommodation sector was significantly ahead of the whole economy (17%).

During 2014, 63% of accommodation sector enterprises received orders via computer mediated networks, while this was the case for only 19% of enterprises in the whole economy.

During 2014, 17% of turnover in the whole economy came from electronic commerce, while this share was 27% for the accommodation sector. It is particularly important here to emphasize the increase from 11% of its share in 2009. The accommodation sector also performed significantly higher than the rest of the economy in terms of social media use. Thus, 71% of enterprises in the accommodation sector with Internet access were using social media. This means that the take-up of social media is nearly twice as high in this sector as in the whole economy (36%). All of these above-mentioned data testify to the importance of ICT use in business, especially in the field of tourism.

## 2. PRACTICAL EDUCATION - GENERAL PART

The very basics education in Informatics that students acquire in the first year of the undergraduate academic studies (UAS) at the teaching course of Business Informatics is extended by, let us name it so, the general practical education.

The focus is on practical work, and we try to cover the three main areas:

- the information systems for destinations management,
- databases and
- content management systems (CMS).

All three areas are something that students will use in the work environment after graduation.

### 2.1. Information Systems for Destination Management

Destination Management Organizations (DMO) main goals are promotion of destination, generation of visitation volume, attraction of investment capitals, and, finally, creation or reinforcing of the positive destination image.

Strategic implementation of Information Systems (IS) can help to achieve all those goals.

There are six fundamentals for using IS strategically in order to achieve and sustain the competitive advantage [13]:

1. Dispelling the myth of Internet marketing. Information flow is the key for implementing IS. A mistake that is often made is setting the goals in terms of volume with the assumption that profits will follow.
2. Picking of the right goal: seeking the positive long-term return. Often the value of IS is not immediately evident.
3. Smart risk management: assessing risks for IS implementation. There is no a good universal IS prototype for destination management. Primary reason for that is the variety and complexity of locations. Because of that it is necessary to try preventing of different sorts of risks, such as technical risk, project risk, functionality risk, and internal and external environmental risks.
4. Differentiation: unique products or services. For maximizing benefits from implementation of IS it is important to present unique products or services that are different from those that competitors offer.
5. Co-alignment: the alignment of the external environment, strategy choice, organizational structure, and financial performance in order to select and invest in the right IS.
6. Continuity. Without continuity, DMOs cannot accumulate unique resources and capabilities to install positive destination images for tourists, investors, and suppliers. The continuity will also switch the information management to the knowledge creation.

### 2.2. Databases

Data is one of the most critical assets of any business. It is used and collected practically everywhere, from businesses trying to determine consumer patterns based on credit card usage, to space agencies trying to collect data from other planets. Data, as important as it is, needs robust, secure, and highly available software that can store and process it quickly. The answer to these requirements is a solid and a reliable database. Since its advent, databases have been among the most researched knowledge domains in computer science [14].

Databases were created to enable computer systems efficient storage and manipulation of data. Various computer systems that require storage and manipulation of large data sets are dependent upon databases (e.g. banks, insurance companies, computer games, social networks etc.). Management of database is done by specialized software called the database management system (DBMS). Initial forming of database, data models, storing data and transferring stored data to database client (as well as many other important tasks) are done by this software.

Database client interacts with DBMS, and DBMS interacts with database. All data of information system is stored in database, and software of information system (client of database) interacts with DBMS. That is why information system is able to efficiently store data, and provide various information using the stored data [15]. All information systems that are used in hotel management and tourism are heavily dependent upon databases because all the data is stored in databases that are operated and controlled by DBMS.

For a basic introduction to databases, students use the famous program Microsoft Access. This program was chosen for several reasons. Students are familiar with user interface, because they are already familiar with the other programs in the Microsoft Office software package. In addition, Microsoft Access presents overall solution that makes it possible to

learn all aspects of working with databases - Design tables and their interconnections, making queries, forms and reports.

Initially, they learn the basics of database design and the Entity-Relationship model, and then they do concrete ways to implement database by creating tables and establishing links between them. After that, students create forms, queries and reports. Tasks are adjusted to the fact that this is an area with which students have not had any contact in their education so far. After the theoretical part, which they learn in lectures and practical work on exercises, they usually manage to satisfactory overcome this part of curriculum.

### **2.3. Content Management Systems (CMS)**

Due to the need of easy-to-use management of large collections of digital content for some time, content management systems (CMS) have been used. Because its architecture CMS is nothing but Information system, but storage and classification of stored content are more suitable to the user that is not a technical person. The most common type of CMS is web publishing. This type of CMS platform is able to deliver content using web based technologies so it can be used via the Internet, or any other network of the same architecture. Because of their easy-to-use management of digital content and ability to publish using web technologies, CMS are very usable in modern business and common these days. That is why this type of technology is used for common Internet sites. Thus, each graduate student is required the basic knowledge of management of modern web sites.

The two most popular CMS today are WordPress and Joomla. Students have the opportunity to learn, through the living example of the web store administration, what makes a modern structure of the website and how it is managed. In these exercises students get different roles so they have opportunity to use CMS platforms in different ways. In this manner, they are able to observe various perspectives on CMS platform of different employees (accounting, managers, public relations persons, storage, etc.).

## **3. PRACTICAL EDUCATION - PROFESSIONAL PART**

In order to prepare students better for the business environment, special emphasis is placed on activities related to the monitoring and management of all hotel operations.

In Serbia, in this area, two software packages clearly stand out - Fidelio made by Oracle and a package of programs made by ProSoft.

### **3.1. Software for Hotel Management - first part, Fidelio**

“Fidelio Version 8 is a fully integrated, flexible software package, designed to maximize the efficiency of hotel operations. The system contains all the functions for the daily operations of the hotel, including all aspects of hotel management and maintenance. It supports all the requirements of the hotel industry, from basic services to complete and luxury services.” [16]

The tasks that students solve using this software are designed to cover all of typical hotel operation areas - customer relationship management (CRM), reservations, front office, cashiering, rooms management, conference and catering management, and night audit. This means that students have the opportunity to go through a complete stay of the guest starting from booking, staying and providing different services, up to the check-out with different payment options.

After working together with the assistant, they move to group work on the preparation of a practical task in this field.

### **3.2. Software for Hotel Management - second part, ProSoft**

“In the modern era of business, optimization of business processes and total business, is incomplete without the implementation of information systems and technology which helps automatisations of many processes. Complete ERP information system that was introduced by Prosoft and which has been present for years in business over 100 clients, follow the evolution of information technologies and offers its users the ease and speed of work, with full automatisations of many day to day operations.” [17]

This software is the domestic counterpart of the aforementioned Fidelio and is represented in many hotels in Serbia. Many of the students have already had the opportunity to meet with him through compulsory professional practice in some of them. In addition, for all of them, and especially for those who did not have this opportunity earlier, theoretical and practical work on exercises is useful for deepening knowledge related to this type of software.

#### 4. THE STUDENTS' ACHIEVEMENT

Before the final exam, students receive points for two colloquiums and for practical work related to Fidelio. The colloquium consists of two parts - theoretical and practical.

The theoretical part of first colloquium covers Information Systems for Destination Management and Databases. The practical part deals with Databases. Table 1 shows the achievement of students on the first colloquium.

**Table 1:** The achievement of students on the first colloquium

Achieved points	Theoretical part	Practical part
0-50%	78%	44%
51-60%	5%	10%
61-70%	8%	11%
71-80%	3%	11%
81-90%	0%	10%
91-100%	6%	14%
<b>Average</b>	<b>1.51 of 5 (30%)</b>	<b>8.26 of 15 (55%)</b>

**Source:** Results of the colloquiums for the subject ICT in hotel management and tourism, 2016

Both parts of second colloquium cover Content Management Systems. Table 2 shows the achievement of students on the second colloquium.

**Table 1:** The achievement of students on the second colloquium

Achieved points	Theoretical part	Practical part
0-50%	76%	9%
51-60%	4%	0%
61-70%	9%	0%
71-80%	3%	4%
81-90%	0%	5%
91-100%	8%	82%
<b>Average</b>	<b>1.88 of 5 (38%)</b>	<b>13.55 of 15 (90%)</b>

**Source:** Results of the colloquiums for the subject ICT in hotel management and tourism, 2016

Looking at the results from the theoretical part of both the colloquium, we conclude that the results of the students' achievement are not satisfactory. In the practical part, the results are better. In a conversation with colleagues who teach other subjects, we find that the situation is very similar. As for the first colloquium, we believe that the main reason is that a subject is quite unknown to students, i.e. the students did not meet with something similar in their earlier education. Additionally, certain knowledge of mathematics and computer science is necessary for a successful understanding of the basics on which information systems work, and this is exactly what most students are missing. Students who achieve better results declare that teaching materials are not considered difficult, rather their colleagues do not pay enough attention to them.

The second colloquium covers Content Management Systems. It is noticeable that students have better mastered this part, especially practical work. These are not surprising, because they use the Internet daily, and the software for hotel management and tourism should be students' main tool.

The most important part of the syllabus, Fidelio hotel software, is a topic of practical work. 78% of students received a grade 10, 22% received a grade 9, with a total average of 9.72. Based on the results achieved, it can be said that our main goal is achieved, i.e. students are well acquainted with the software that will most imply them in later professional work.

Below is a shortened overview of typical tasks that the students solved [18].

Customer Relationship Management (CRM)

- Enter the five individual profiles with various information and different types of clients
  - Enter three the company's profile with the various information and connect them to a previously created one individual profile
  - Enter the two profiles type travel agency with the various information and connect them to a previously created one individual profile
  - Make one task and one activity
- Reservations
- Create new reservation with the various information
  - Change already made reservation
  - Create invoice for reservation
  - Create unconfirmed (Tentative) reservation



#### Group Reservations

- Create a group reservation for two different types of rooms
- Share group reservations
- Create Pro-Invoice
- Make automatic assignment of rooms
- Create Confirmation Letter
- Make cancellation of one reservation within this group

#### Front desk

- Make check-in for all expected arrivals
- Enter data from personal documents
- Make Walk-in reservation
- Make Undo Check-in

#### Housekeeping

- Change the status of all rooms to Dirty, Clean or Inspected
- Set up one room status to OOO or OOS, with a defined reason
- Enter the task for maintenance service

#### Cashiering

- Perform input of charges for particular services
- Enter charges for local tax
- Print Info Account
- Make regular check-out
- Close your coffers and print cash reports

The goal that we want to achieve with this syllabus is that most students are well prepared for the business environment that awaits them. For the group of the best students who are interested in deeper study, we organize individual mentoring work. The fact that the exam in the first two examinations successfully passed by 89% of students clearly illustrates how well this idea is well balanced in the curriculum of the course.

## 5. STUDENTS' POINT OF VIEW

Students of our Faculty are regularly interviewed on the quality of teaching process. Considering the results of the survey related to this subject, we could conclude that students are mostly satisfied with the quality of teaching. Average ratings in the previous two years are: Organization of teaching 4.61, Content of the teaching subject 4.08, Student participation in the classroom 4.37, and total average of 4.23.

In individual interaction with students, although without any formal proof, experience shows that students that have had more working practice in hotels are more satisfied with these teaching materials, especially with the practical work [18].

## 6. CONCLUSION

In this study we have presented some general, technical and theoretical experiences from the ICT teaching process that we believe can be useful for others.

A significant indicator of the success of the teaching approach involving a combination of teaching materials and practical activities are very high grades that students receive for compulsory professional practice. Students have the obligation to conduct at least three professional practices lasting at least 30 days at one of the partners of our faculty within the hotel industry, travel organizers, travel agencies and tourism organizations in the country and abroad.

Of course, it should not stop here, because modern business changes day by day, so it is extremely important that teaching materials and the way of performing practical education are constantly innovated in order to successfully follow these changes.

One of the first steps we plan to do in this regard is to create a technical environment that looks more like a modern business environment that awaits students after graduation. This includes expanding the range of required software, as well as introducing adequate hardware such as dedicated device with touch screen.

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