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**TOURISM
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**Tourism product as a factor of competitiveness of
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**THEMATIC
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I



**UNIVERSITY OF KRAGUJEVAC
FACULTY OF HOTEL MANAGEMENT
AND TOURISM IN VRNJAČKA BANJA**



INFORMATION AND COMMUNICATION TECHNOLOGIES IN HOTEL MANAGEMENT AND TOURISM EDUCATION

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Abstract

Today business is very dependent upon computers and digital devices in general. Consequently, tertiary education studies aimed at preparing students for business environment must include a great deal of practical education. The most beneficial type of such practical education is the one that includes the environment most similar to the environment that will welcome graduates when they start working. In this study a brief overview of practical education on teaching course of Information and communication technologies in hotel management and tourism is given. This overview could prove useful as a guideline for practical education in similar teaching courses.

Key Words: *informatics, education, information systems, hotel management systems, practical work*

JEL classification: *I20*

Introduction

Modern digital technologies have changed the way we live and work. Contemporary industry, medicine, tourism, business, travel, etc. are heavily dependent upon these technologies e.g. (Filipović et al., 2011a; Filipović et al., 2011b; Krsmanović et al., 2012). Although the impact of ICT across the past two or three decades has been huge, when we analyze education, there seems to be far less change than other fields have experienced. A number of people have tried to explore this lack of activity and influence (e.g. Soloway & Pryor, 1996; Collis, 2002).

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Education drives work and social activities. That is why it must be up to date with the of business needs and requirements and changes occurring in 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.

There are many factors that reduce quality of information and communication technologies education. Some of these factors are the lack of funding to support the purchase of the technology, a lack of training among established teaching practitioners, a lack of motivation among teachers (e.g. (Starr, 2001; Vasović & Milasinović, 2014)).

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).

The course of academic subject Business Informatics provides elementary introduction to informatics in general, whereas 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 academic subject Information and Communication Technologies in Hotel Management and Tourism is presented briefly in this paper.

After a student has successfully completed the final exam in the academic subject Information and Communication Technologies in Hotel Management and Tourism, he/she is able to understand the role and concept of information and communication technologies, basic role and structure of information systems in general, concept and basic modelling of databases, basic of web based systems, and management information systems.

The most important practical aspects of this academic course is that a student gains skills in the effective use of information systems designed specifically for hotel management and tourism, and the application of that software in various business routines and rolls.

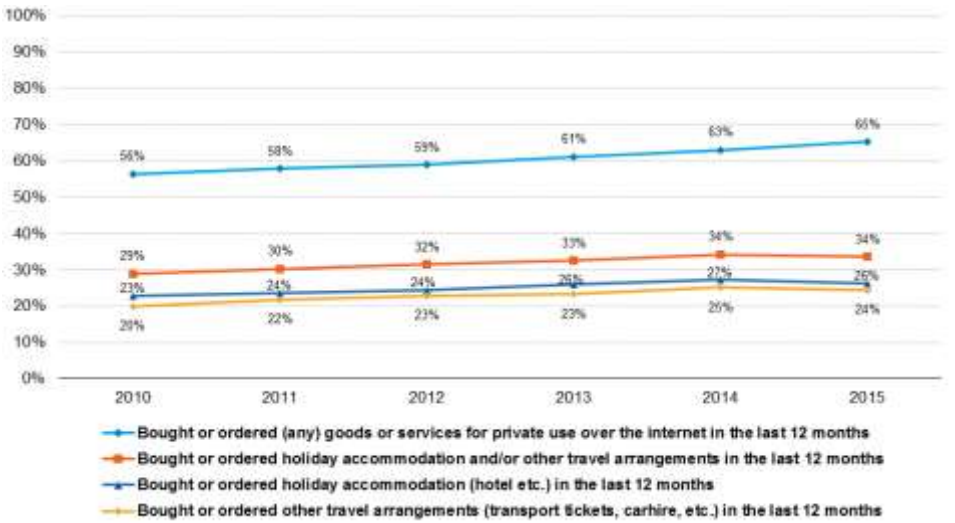
According to (Eurostat), the rise of the Internet has drastically changed the way citizens travel, prepare and book travel arrangements and the way

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 by Eurostat, it is worth mentioning the following:

The majority of tourist accommodation is booked online. With 4 out of 10 Europeans searching online for travel related information, the Internet is a major communication channel for the tourism sector. Over 1 in 3 Internet users bought or ordered travel related services online. Over the last few years this share is constant (Figure 1).

Figure 1: *Internet use for buying or ordering travel related services (as % of all Internet users), EU-28, 2010-2015*



Source: *Eurostat*

The main statistical findings indicate that ICT usage in tourism is significantly ahead of the other economy sectors (Figure 2).

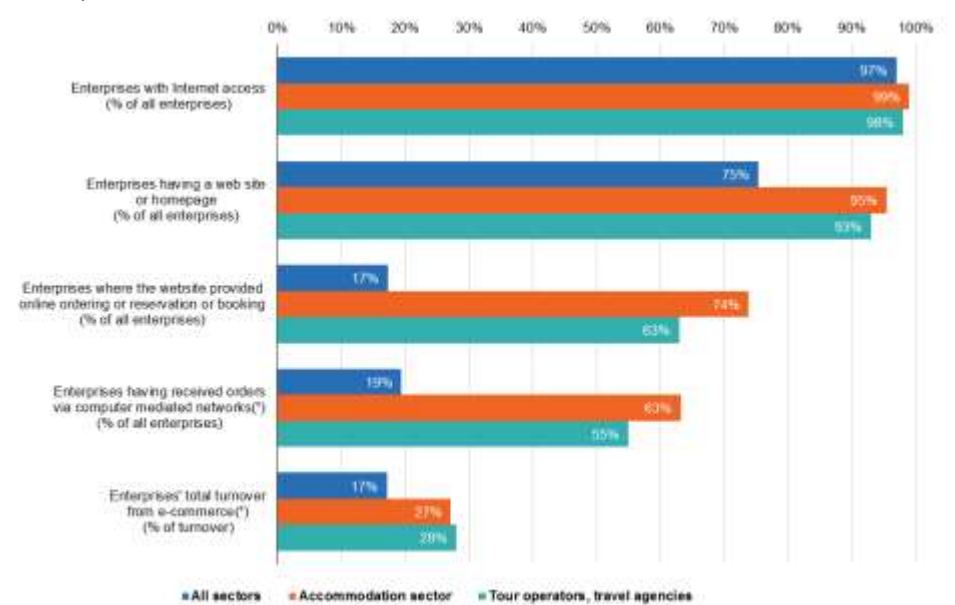
Websites are the entry point for e-business. In 2015, 95% of all enterprises in the accommodation sector had a website, compared with 75% in the whole economy.

With 74% of enterprises providing online ordering, 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, whereas this was the case for only 19% of enterprises in the whole economy.

During 2014, 17% of turnover in the whole economy came from e-commerce, whereas this share was 27% for the accommodation sector.

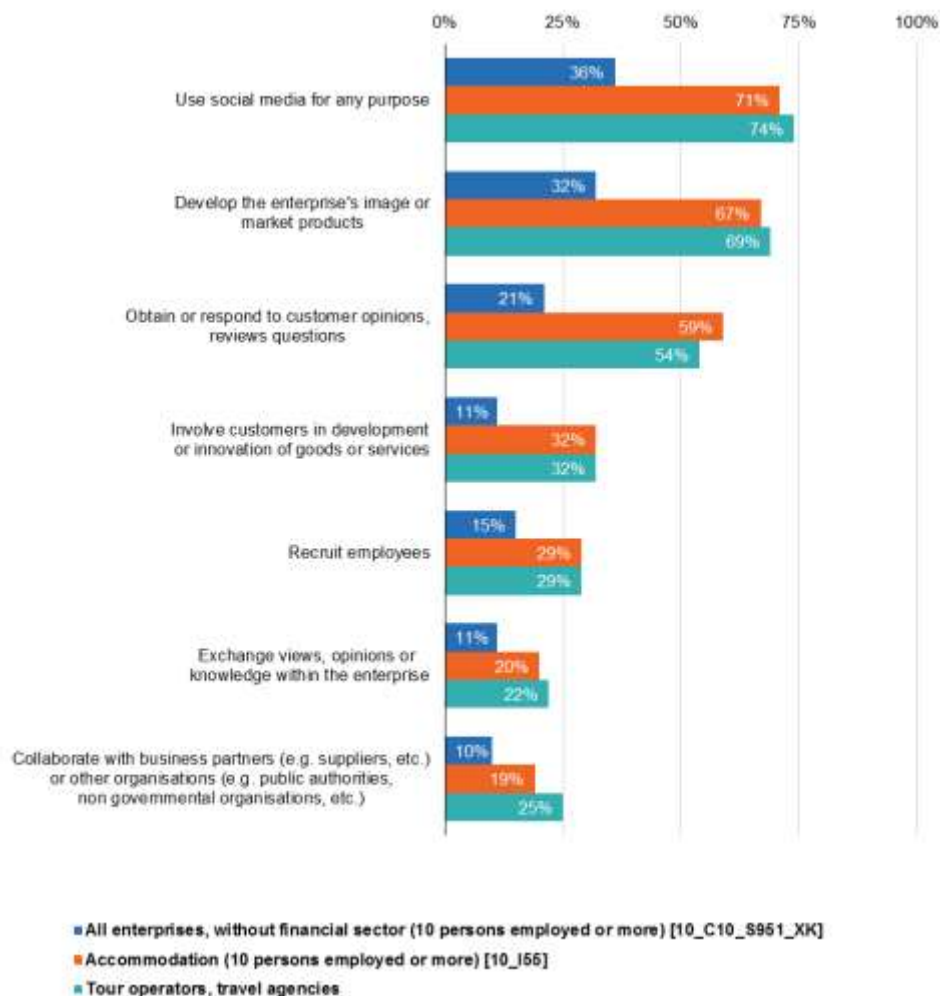
Figure 2: *Share of enterprises by use of the Internet and economic activity, EU-28, 2015*



Source: Eurostat

The accommodation sector also performed significantly higher than the rest of the economy in terms of social media use - 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 than in the whole economy (36%) (Figure 3).

Figure 3: *Use of social media, purpose of use (as % of enterprises with Internet access), EU-28, 2015*



Source: *Eurostat*

General practical education

The students' education in Informatics at our Faculty focuses on practical work, and the first segment is a part of which we can call the general practical education that extends the very basics that students acquire in the first year of the undergraduate academic studies (UAS) at the teaching course of Business Informatics.

It is necessary to cover the three main areas that will be used when students, after graduation, are in the work environment - the information systems for destinations management, databases and content management systems (CMS).

Information Systems for Destination Management

Strategic implementation of Information Systems (IS) can help a Destination Management Organizations (DMO) to promote its destination, generate visitation volume, attract investment capitals, and, finally, create or reinforce the positive destination image.

According to (Chang, 2003) there are six fundamentals for using IS strategically in order to achieve and sustain the competitive advantage:

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.

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 (Sharma et al., 2010).

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 (Milasinovic, 2016). 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.

Content Management Systems (CMS)

Owing to the need of easy-to-use management of large collections of digital content for some time, content management systems (CMS) have been used. Due to 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, PR, storage, etc.).

Expert practical education

The second segment of practical ICT education that should be focused on in is closely linked to the very profession and refers 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.

Software for Hotel Management - 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.” (Micros)

The functionality of this software package is confirmed in many great hotels around the world, and includes:

- The database clients (Customer Relationship Management - CRM)
- Reservations
- Front office (Front Desk)
- Cashiering
- Rooms management
- Conference & Catering Management
- Night Audit

The tasks that students solve using this software are designed to cover all of these areas. This means that students make a new guest profile, they undergo various variants of registration guests in the hotel, different events that occur during a guest's stay at the hotel and, finally, they perform a check-out with various options for invoicing and payment for provided services. When, with the help of teaching assistant, they successfully pass through these tasks, they move to an independent work on practical assignment in this field.

Software for Hotel Management - 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.” (Prosoft)

Business Navigator is a centralized ERP information system that compiles data for accounting and other records that accompany the business and are the basis of managerial reports on which are based all business decisions. Hotel Software is a complete record of guests enriched with statistical and financial reports. Front office with the household segment is supported by modern systems such as PABX, PayTV / paybar, system of smart rooms, and connected with other software solutions.

Catering software provides a timely insight into the implementation of the restaurant business and the resulting spendings. The work of catering

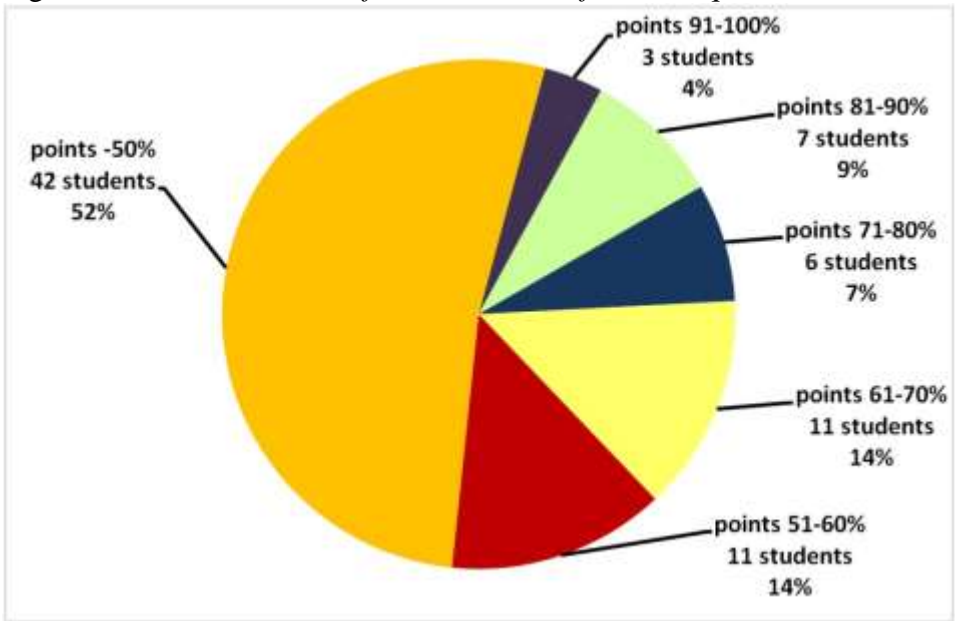
facilities is easily managed with the use of an information system that enables more efficient and better business. The integration with current computer technologies is supported.

Wellness software enables the planning of available resources of SPA and Wellness centers. Besides that, the time management of employees is enabled. All of that is accomplished through booking of the time slots and the necessary resources for the services of these facilities. It is possible to make connections to other software solutions and to other facilities.

The students' achievement

The colloquium consists of two parts - theoretical and practical. The theoretical part of first colloquium covers Information Systems for Destination Management and Databases. The average score was 1.51 of 5. The practical part deals with Databases. The average number of points was 8.26 of 15.

Figure 4: *The achievement of students on the first colloquium*

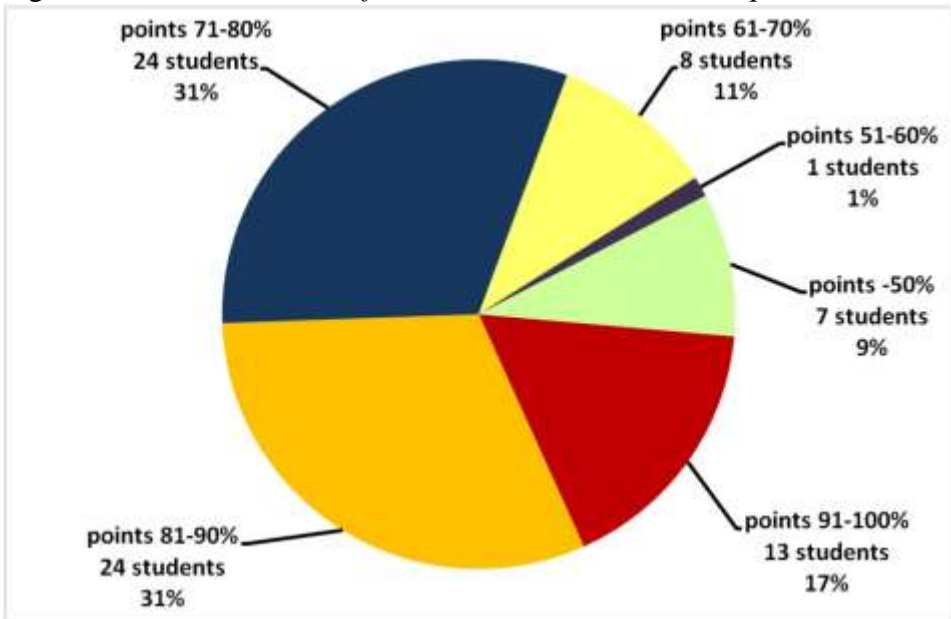


Source: *Results of the colloquiums for the subject ICT in hotel management and tourism, 2016*

It is notable that the results of the students' achievement are not satisfactory. We believe that the main reason is that a subject is quite

unknown to students, i.e. they have not had the opportunity previously to meet with something similar. Although a very basic understanding of underlying computer science and mathematics mechanisms of information systems is necessary for this colloquium, it seems that students are repulsive to these matters. Teaching material is not considered difficult, rather students' attention on these subjects is not sufficient.

Figure 5: *The achievement of students on the second colloquium*



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

Both parts of second colloquium cover Content Management Systems. In the theoretical part, the average score was 1.88 of 5. The average number of points on practical part was 13.55 of 15. It can be said that the students have mastered this theme well. This is to be expected, because the Internet is something that is very close to them, and usage of software for hotel management and tourism is considered students' main tool.

On the practical work, it is evaluated how students have mastered the most important part of the syllabus that refers to basic knowledge of Fidelio hotel software, because that is what they will benefit from most after graduation. 78% of students received a grade 10, 22% received a

grade 9, with an total average of 9.72. All that shows that our main goal is achieved, ie. students are very well prepared for work in this software.

Below is an overview of typical tasks that the students solved.

Customer Relationship Management (CRM)

- Enter the five individual profiles with the following information:
Surname, Name, Language, Address, Phone, Email, Date and place of birth, Pole, Nationality, Personal identification number, Identity document (ID card or passport or driving license)
One profile is VIP1 client and his room is complimentary
- Enter three The company's profile with the following information:
Name, Address, Phone, Email, Tax ID
Connect one pre-made individual profile with appropriate company
- Enter the two profiles type travel agency with the following information:
Name, Address, Phone, Email, Tax ID
Tourist fee 10% of gross accommodation
Connect one pre-made individual profile (which is not connected with the service provider) with the corresponding travel agent
- Make one task and one activity

Reservations

- Create new reservation
One room, two adults, one baby
Guests come for 10 days and stay three days
They want a room on a lower floor, non-smoking
Reservations color is blue
Reservation is unconfirmed, guests will confirm the reservation five days before arrival
Save reservation
Re-enter the reservation and change the status of the reservation to confirmed
Check-in was changed - visitors come today
According to the general manager' decision, the visitors could get 15% discount
Guests want a separate account for additional services
Assign a room reservation
Save reservation again

- Create three reservations for individuals where everyone pays their own expenses
- Create a reservation for two people in the room, using the option MultiGuest
- Create Share Reservation, where each guest can sign in and out independently of the other people in the room
- Create a reservation for one person to stay five nights and the second day other person will join him
- Create Party for one reservation and then join three other reservations to the Open Party
- Make a copy of reservation using the Add On option
- Create invoice for reservation
- Create a reservation for three rooms, then split to individual reservations and adjust the reservation holders
- Create a reservation that has statistics for the company or travel agency
- Create a reservation and set that company pays part of the services
- Create unconfirmed (Tentative) reservation

Group Reservations

- Create a group reservation for two different types of rooms, and set the same dates of arrivals and departures for all group members
- Share group reservations using Rooming list
- Create Pro-Invoice
- Make automatic assignment of rooms
- Enter Trace for this group - "Extra towel"
- Create a group reservation for three different types of rooms, where two master group reservations are with the same dates of arrivals and departures of all group members, and one master group reservation is with a shorter period of residence
- This group reservation is included in the statistics for the company
- The company pays the costs of accommodation and breakfast, and other services guests pay themselves
- Share group reservations in situation when you do not have a list yet
- 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 for the visitors who are logged
- Enter the message for the guest

Enter Locator
Make plan for a change of the guest room
Start display Rack Room, Floor Plan, Availability
Make Walk-in reservation
Make Undo Check-in of one reservation
Print Trace report

Housekeeping

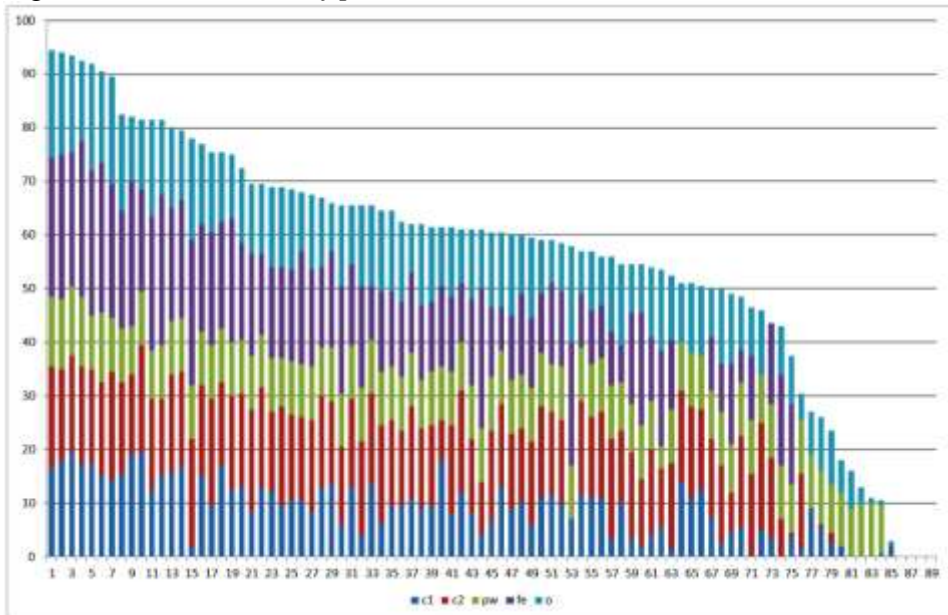
- Change the status of all rooms from Dirty to Clean
Change the status of all rooms with the expected arrival to Inspected
Set up one room status to OOO, with a defined reason, and for a period of 30 days
Set up one room status to OOS, with a defined reason, and for a period of two days
Enter the task for maintenance service - do TV repair in a particular room
Print a report for household with plan for changes of towel and bedding in the rooms

Cashiering

- Perform input of charges for particular reservation for some of the following services: Telephone, PayTV, Laundry, Mini bar...
Do transfer of telephone charge to another window
Reverse inscribed debt (eg. telephone)
Enter charges for local tax with the amount of five; The amount for the two tourist tax should be transferred to a different window
Transfer some charge to another room or another Financial account
Print Info Account
Make pre-charge for guest's entire stay and receive payment, without check-out
Make check-out without closing the account
Make regular check-out
Close your coffers and print cash reports
Make a review of history of invoices

Figure 6 shows total number of points after two examination periods (january and february 2017). This is the sum of points achieved at first colloquium (c1), second colloquium (c2), practical work (pw), final exam (fe) and other (o). As can be seen, more than 80% of students have successfully passed the exam after the first two examination periods (89% of students who took the final exam).

Figure 6: *Total number of points*



Source: *Rating results at the subject ICT in hotel management and tourism, 2016*

The main guideline for the course syllabus is that most students should be prepared for business environment afterwards, rather than create an in depth study with best students. Students interested in deeper study of the subject are advised to have individual student-mentor lessons. Graph shown above clearly illustrates how much this idea is well balanced in the course syllabus.

Students' point of view

At the end of each semester, students of our Faculty are interviewed on the quality of teaching. According to the survey results, which are shown in Table 1, the students are very satisfied with the organization of teaching in this subject. A slightly lower score for the content of the subject is, perhaps, the result of the fact that students do not have a clear insight into the importance of the matter to be treated for their future professional engagement. Students are satisfied with their engagement during lectures and exercises, as well as the quality of the teaching staff. 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.

Table 1: *Results of evaluation of teaching of the subject of ICT in hotel management and tourism*

	2015/2016	2016/2017
Organization of teaching	4.61	4.42
Content of the teaching subject	3.81	4.08
Student participation in the classroom	4.37	/
Exam	4.23	/
Professor	4.16	3.98
Teaching assistant	4.70	4.08
Total	4.23	4.15

Source: *Documentation of the Faculty, 2015-2017*

Conclusion

This study points to several important general, technical and theoretical aspects of the information and communication technologies teaching process.

A significant indicator of preparedness of students for the business environment is the estimates they receive on the professional practice. Students UAS at our faculty, starting from the second year, have a mandatory work placement for a minimum of 30 days. Professional practice is carried out within the hotel industry, travel organizers, travel agencies and tourism organizations in the country and abroad (Sekulic et al., 2015). After the professional practice, mentors evaluate them. From the very beginning of these professional practices our students have achieved the average score very close to the maximum.

Table 2: *Average scores on professional practice*

2012/2013	2013/2014	2014/2015	2015/2016
9.85	9.91	9.97	9.88

Source: *Documentation of the Faculty, 2013-2016*

We found that this combination of teaching materials and practice activities led our Informatics course to adequate student preparation for business environment. However, nowadays business is ever changing, so all teaching materials are prone to aging and must follow this change in adequate manner. The first further step in the successful preparation of

students for the working environment is planned to be the inclusion in the teaching process a specific touchscreen devices used in the hotel business. Although in the first year of the UAS, at the teaching subject Business Informatics, students had the opportunity to use similar devices in the education (Kraguljac & Milasinovic, 2016), we have intention to provide them with the original.

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