BUSINESS INFORMATICS AND ICT EDUCATION IN THE CONTEMPORARY HOTEL MANAGEMENT AND TOURISM ENVIRONMENT

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Abstract: The modern world operates digitally more so than physically, especially in the last two years. In order for us to operate it and know how to properly behave in said world, having digital literacy is a must for any contemporary manager. This study before you aims to show the experiences we come across in the field on a daily basis as well as how the courses of Business Informatics and Information and Communications Technology apply in the real world. Both courses mentioned in the paper include education through simulation of realistic real-life situations. The students are taught how to think like managers and how to include and use all of their collected knowledge and experience while operating information systems like Joomla, Fidelio, etc.

Keywords: informatics, ICT, education, management, practical work

1. INTRODUCTION

If we asked anyone from history how they would characterise the era they live in – the answer would always be something along the lines of "turbulent, ever-changing, or innovative". Even now, that description is more than adequate. However, the big advantage we have is being more prepared for change and being more adaptable. That is largely due to the development of technology and information and communication technology (ICT) and more precisely information systems.

Patterson defined an information system as a group of interconnected components that work together on the execution of a series of different functions in order to convert data into information which can further be used to support the prediction, planning, control, coordination, decision-making as well as operational activities of an organisation [1].

In order to be competent to use these systems, it was required to have a specific skill. To describe that skill a new term has been coined – digital literacy. The American Library Association has defined it as "the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills" [2]. As such, this skill requires education, be it formal or informal. Regardless, there are certain barriers one might face when trying to learn these skills. Some of them are lack of funding to support the purchase of hardware and software, inappropriate training among established teachers, insufficient motivation etc. [3]. There is plenty of open source software that is available and able to overcome some of the aforementioned difficulties and as such is usually the first choice among the implementation of a learning management system into the education process [6].

Naturally, the kinds of systems mentioned above vary drastically depending on their specific use. Namely, they are designed with a certain goal in mind – the goal to assist in carrying out tasks in the fields for which they are designed.

The way contemporary information systems operate is not only to assist in the decision making process of the upper management, or to simply store and organise large quantities of data but they are also seen as tools for getting the upper hand or creating a competitive advantage in the market [4][5].

Precisely for that reason, information systems represent a handy tool in every contemporary manager's belt and as such require training and education for their proper and most efficient use. In order to ensure said tools are effective and ready for use, managers must not only know how to operate the technology but also adequately adapt it to the business strategies and goals of the company they work for. They are also required to combine their own managerial skills and knowledge with their IT knowledge marketing, human resources, etc.

This study before you aims to show the experiences we come across in the field on a daily basis as well as how the courses of Business Informatics and Information and Communications Technology apply in the real world. Two courses at the Faculty of Hotel Management and Tourism in Vrnjacka Banja in question - Business Informatics (1st year) and

Information and Communication Technology in Hotel Management and Tourism (4th year) - both include education through simulation of realistic real-life situations. The students are taught how to think like managers and how to include and use all of their collected knowledge and experience while operating information systems such as Joomla, Fidelio, etc.

2. TOURISM AND HOTEL MANAGEMENT IN THE DIGITAL ERA

The importance of IT as a tool in creating competitive advantage for business on the global market was recognized as early as mid-1980s, so it comes as a bit of a surprise that the tourism sector only realised its importance in the early 1990s [7]. This was despite the widespread application of IT at the operational level in the form of computer reservation systems (CRS) in the 1970s and the global distribution systems (GDS) in the 1980s, which were pioneered by the airline industry and subsequently adopted by hotel chains and travel businesses [8].

Since then, they have seen continuously increasing use in this field. A receptionist in a hotel must have a tool to tell him the availability and type of rooms, for specific dates and other given conditions; they must know the prices of all types of rooms, including discounts for groups or specific booking conditions. For these reasons they require accurate and instant access to data the hotel system possesses. In an instance where that is not available, they cannot do their job as efficiently and can give false information to the customer resulting in loss of trust. Furthermore, without the exact number of available rooms, they can easily overbook the hotel and cause damage both financially and in terms of reputation and brand image. This is especially costly for smaller, family hotels which already may be struggling with acquiring their market share in the fight with big conglomerates.

According to statistical data provided by "Statista GmbH", a leading provider of market and consumer data, in 2020 there were 21.6 billion devices connected to the Internet in total [9]. Which is just over three devices per every single person on planet Earth. Graph below shows the estimation for the near future. Additionally, it shows the number of IoT and non IoT active device connections worldwide.
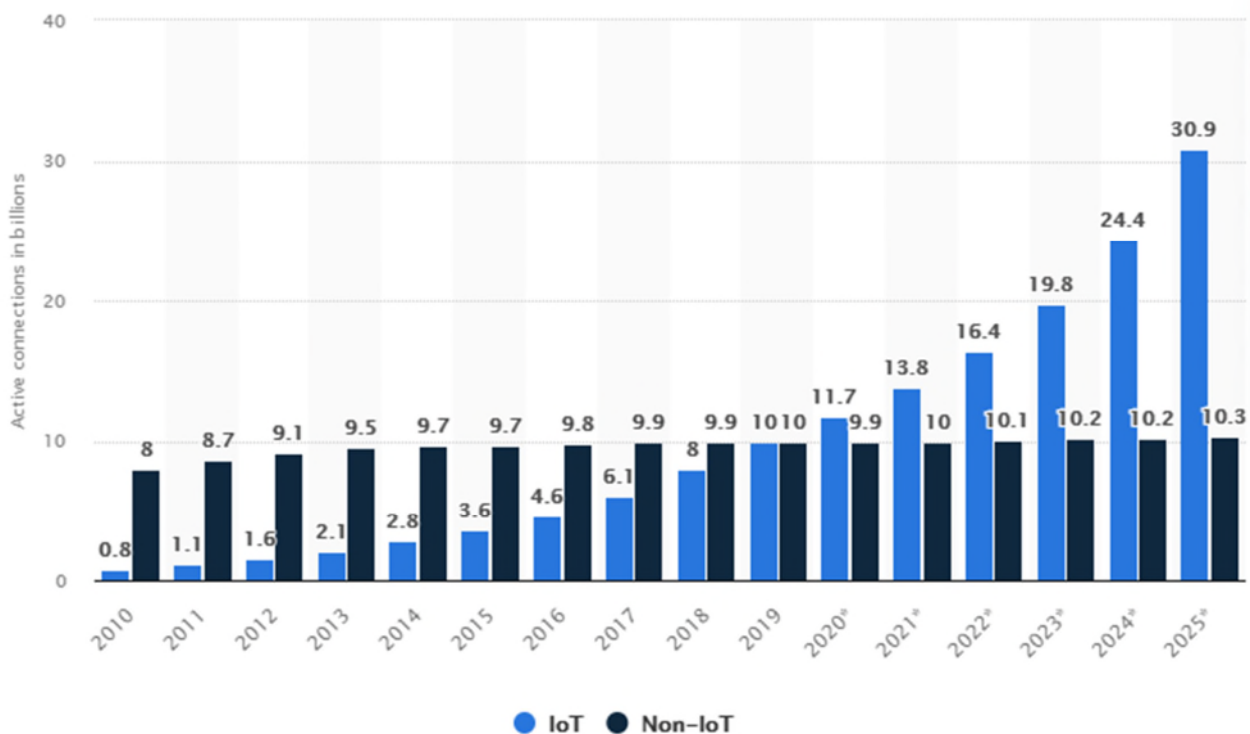
Picture 1: Internet of Things (IoT) and non-IoT active device connections worldwide from 2010 to 2025
(Cisco, www.cisco.com)

Xia explained that generally speaking, IoT refers to the networked interconnection of everyday objects, which are often equipped with ubiquitous intelligence. IoT will increase the ubiquity of the Internet by integrating every object for interaction via embedded systems, which leads to a highly distributed network of devices communicating with human beings as well as other devices [10].

Such huge presence of connected devices with the existence of online information systems means that tourists have a more direct link to hotel's or tour agency's information systems. This has directly influenced the development of the tourists themselves, making them more informed, independent and sophisticated. Furthermore it has greatly reduced the workload and has evened the balance from the demand and supply. In earlier times, all of the information was held directly by the hotel staff, so they were the only source of information. Nowadays, a potential tourist can go to the website that

collects and presents hotel offers for an area, review individual offers, prices, as well as terms and conditions, amenities, features, etc. They will contact the hotel usually only to confirm their booking or in case they have specific questions that need to be answered by human staff.

On the topic of the Internet, cyber security is becoming an increasingly important topic needing to be addressed. Lots of teenagers are not aware of just how dangerous their online presence can be, and how many problems could be prevented simply by taking some precautionary measures. A lot of these are introduced to the students, as well as some of the risks.

3. EVERYDAY MANAGERIAL SKILLS

A brief review of skills taught at the Business informatics and Information Communication Technology in Hotel Management and Tourism courses follows.

3.1. Text processing applications

The example for some hands-on skills taught at the course of Business informatics and ICT in Hotel Management and tourism would be as simple as how to operate text processing applications; students –future managers- are taught using Microsoft Office Word, mainly for its popularity and presence in the business world. However, teachers aim to teach the very use of text processors rather than the said one in particular. Its functions are covered in depth, but the nature of said application is basic and present in many different brands. For example, if the company chooses to save some money and doesn't buy a Microsoft office licence for its computers, it may opt to use applications such as LibreOffice and OpenOffice which are only variants of text processing applications that are also very popular. For this reason, students are also introduced to the existence and functions of said applications. The goal of our BI and ICT in Hotel Management and Tourism courses is to equip each student with the know-how of overcoming any obstacle that the world of text processing might introduce.

Another simple skill that proves itself very useful in later life is the use of keyboard shortcuts. This might sound like a skill that can be overlooked but for that very reason it isn't. This kind of skill can later prove to the employer that the employee really has the knowledge and how-to of the word processing applications. They create a more efficient and faster worker - directly resulting in better work efficiency overall.

Along with teaching students how to process text in various applications they are also taught what language to use, and how to talk and write formally. This is considered a crucial part of their future, and as such, is very important to be taught as early and thoroughly as possible. Electronic mail directed to colleagues on one hand, and his superiors on the other greatly differs and should be in every manager's toolbox.

3.2. Tables and Spreadsheets

After getting a thorough grasp on how text formatting and basic tables work, the first-year BI course proceeds to teach a more complex application - one less-frequently used by students, but greatly present in the contemporary work environment of today. MS Excel is a spreadsheet based application using a grid of cells arranged in numbered rows and letter-named columns to organize data manipulations like arithmetic operations. It features calculation, graphing tools, pivot tables, and a macro programming language called Visual Basic for Applications [11]. Using this programme, students are taught how to use the most commonly used functions such as If, countblank, countif, count, vlookup, sum, min, max, average, and many more. On top of the previously mentioned, they are also stimulated to think logically and see what is being asked of them, assessing the situation. This teaches them how to analyse the problem and how to approach it without thinking strictly of the options and features of the application. Once they have some ideas how to solve the presented problem they would proceed to investigate the application and provide a solution within its possibilities. Similarly to text processing applications, cost-free alternatives are also presented to the students.

Both of the before-mentioned applications are tested individually to confirm the students' grasp and understanding of related tasks and topics.

3.3. Presenting and Presentations

Following the completion of previous two chapters, the course continues apprehending the tools used in a modern office. Regardless of one's position and job title, presenting is almost a given. People have done it for centuries: in form of teaching, introducing a new product to the market, reporting to their superior etc. [13]. Presenting is one of the most efficient tools a manager can have. Even when a team isn't the most efficient or a goal isn't met, a good presentation can portray a completely different perspective of the outcome. To some, it comes naturally to fearlessly stand in front of a crowd and talk about various topics, while a lot of other people have a problem, which is where the presentation itself plays a big part. If you are confident in the presentation itself, you are more likely to do well in the spotlight [12].

While the course of BI primarily focuses on the technicalities of creating a digital presentation, it also pays a fair amount of attention to how to actually present; how to behave on the "stage" regardless of the presentation being digital or analogue.

History remembers countless examples where it was the presentation of the product that actually did the selling, and not the appeal or the quality of the product itself. One could observe presenting as the same as packaging of a product, especially when it comes to selling services - since they have no physical form and therefore aren't tangible, promotion of said package ought to be done with great care and planning with little to no room for improvisation [14].

To further motivate and prepare students for something that will most likely become a daily task in the near future, 10% of the final grade of this course consists of the practical work. The practical work is split into two equal parts – one being students' choice of topic and creation of a brief presentation showing what they had learned and the other part consisting of *the simulation* which enlists creating video-related materials based on the first half of the practical work.

3.4. ICT Education Course

During the final year of the bachelor studies at the Faculty of Hotel Management and Tourism in Vrnjačka Banja, students are enrolled in the Information and Communication Technology in hotel industry and tourism course which is designed to cover four important fields, both practically and theoretically. The fields are
•   Information systems and databases;
•   Hotel information systems;
•   Content management system;
•   Overview of intelligent information systems

Each of these areas is studied theoretically in lectures and practically in exercises. In addition to the aforementioned areas, there is a separate section provided specifically for intelligent information systems which enables students getting in touch with the latest state-of-the-art technologies related to information systems.

In this way, we sought to set the future goal of teaching the training of future hotel and tourism managers for the efficient use of modern information and communication technologies. This should ensure that they are easier and faster to integrate into the companies or organizations in which they will be employed after graduation. In addition, they should bring knowledge and experience in the use of modern technologies to the business environment.

The compulsory professional practice that our students have been pursuing since the second year of undergraduate academic studies has an important role to play in ensuring that this process is not one-sided. As the internship is carried out with partners from different industries such as hotels, travel agencies, tourist organizations, and various companies, students have a great opportunity to be acquainted first hand with the information systems used in the hotel and tourism industry. The main benefit is the combination of what is learned in the classroom and what happens in practice. Additionally some of the partners are from different European countries - which further allows students to investigate said systems even beyond the border of their home country and ensure they get the best, most realistic image of how things are done in the field.

3.4.1 Basic concepts regarding information systems

In the modern era for business and private purposes large quantities of data are generated on a daily basis. These data are almost always stored in a digital form. Systems that store, transmit and process data, then deliver these data to users - when they request, it is called information systems. Simply said, these are systems that contain data and deliver information according to user requirements. That is why the time we live in is the time of the information systems[15].

In order to obtain a more comprehensive picture of information systems, the following five fields are covered:
1.   Introduction to information and communication technologies;
2.   The concept of the information system;
3.   Architecture of the information system;
4.   Stakeholders in the development of the information system;
5.   Process of the information system development.

3.4.2 Databases

Databases and database systems are observed as an essential component of life in modern society. Elmasri and Navathe stated that most of the people encounter several activities every day that involve some interaction with a database. For example, if someone makes a hotel or airline reservation, if they access a computerized library catalog to search for a bibliographic item, or if they purchase something online – such as a book, toy, or computer – chances are that these activities will involve someone or some computer program accessing a database. Even purchasing items at a supermarket often automatically updates the database that holds the inventory of grocery items. This leads to the fact that databases play a critical role in almost all areas where computers are used, including business, electronic commerce, engineering, medicine, law, education, and library science [16].

Through the subject of Information and Communication Technology in hotel management and tourism students can gain insight into basic concepts related to databases, such as:
•   Method of working with the database;
•   Relational databases and their characteristics;
•   Basic characteristics of object databases;

- Database design;
- Redundancy elimination;
- Keys;
- Normal forms

3.4.3 Hotel Management Information Systems

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

The tasks that students solve using this software are designed to cover all of the typical hotel operation areas – from customer relationship management (CRM), individual and group reservations, front office, housekeeping, cashiering, rooms' management, conference and catering management, night audit, to a little more complicated operations such as transferring debt to another room, check – out with different payment options. 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 closing the bill and checking out [17].

3.4.4 Content Management Systems (CMS)

Due to the need for easy-to-use management of large collections of digital content, content management systems (CMS) have been used. The most common type of CMS is web publishing. Delivering content using web based technologies so it can be used via the Internet (or any other network of the same architecture) is one of the benefits of using this type of CMS platform. The two most popular CMS today are WordPress and Joomla. Through the living example of the web store administration, students have the opportunity to learn what makes a modern structure of the website and how it is managed [17].

4. ADDRESSING ENCOUNTERED PROBLEMS

During the courses at the faculty we have been able to identify some problems or obstacles that students have come across as well as some problems of the course itself which have since been addressed and adapted accordingly. Having said that, the following problems aren't exclusive to these courses nor the practices but have been observed and addressed as equally important.

In accordance with seeing the importance of addressing these problems, more attention is paid to this chapter by taking time, and explaining with great care anything the students might contemplate over. Simply put, more classes are devoted to resolving these problems and helping the students.

4.1. Obstacles observed during the courses

Being digitally literate is equally important for everyone, regardless of their age or occupation. Generations of people who have been working for a long time already and aren't so tech-savvy may prove to be half as efficient at work as young adults who have recently been educated to operate the newest technologies and aids in their respective fields.

Changes to our environment happen very quickly, hence the necessity for a manager to be able to think proactively, planning for the future and adjusting and adapting the plans and goals to momentary conditions. For these reasons, the workforce in the contemporary work environment is often treated like equipment where they need to be "upgraded and updated" or trained to be more efficient. Many employers will be willing to provide training for their workers, but many of them will simply look for younger generations that already come equipped with this knowledge.

During our time spent with the students, it comes naturally to conclude what the students have most background knowledge on and what they find easiest to learn. On the other hand, it is also easy to conclude what seems to be more difficult. The easier way to observe these phenomena is to look at the marks or points that students get on tests after each chapter. One of the things that are most difficult to learn seems to be working in MS Excel. This largely seems to be due to the very nature of working in this program and it being very different to something the students had been accustomed to while editing a text or making a presentation. Firstly, the program demands the use of the keyboard much more than that of the mouse, compared to other applications covered in the BI course. Next problem would be the use and knowledge of the English language. It is immensely important to know the language while operating this program, so, naturally, students who don't have a formidable background in this field face much greater difficulty; purely by not understanding what the feature does, making the built-in instructions pointless. Thirdly, as this course takes place during the first year of bachelor academic studies, lacking familiarity with how the system as a whole functions, students refrain themselves from asking questions and asking further explanation. Finally, and possibly the problem which leaves little-to-no room for solving, is the inability to think logically. Students have shown they haven't previously been taught how to think outside the box and analyse and solve the problem ahead of them. Therefore they often aren't aware of what is being asked of them. Naturally, this problem has been observed in a certain percentage of the student population and as such doesn't involve everyone, but is important to mention regardless.

The fourth year's course of ICT in Hotel management and tourism greatly shows improvement in how the students approach given problems and tasks and they show advancement in logical thinking as well as their managerial skills learned throughout their schooling experiences. One of the problems that is known to persist is the lack of the understanding and use of the English language.

4.2. Reported problems during the student internship programme

Thanks to the surveys done after each student internship, sharing their experiences, we are able to observe the experiences and therefore problems that students face during their internship programmes starting with the second year of bachelor studies [18]. There have been little to no problems during the internship regarding working in the aforementioned Microsoft Office Suite application. However, some of the problems were encountered with the information systems of individual hotels, especially ones used in other countries. This problem has already been anticipated as the systems can be specifically designed for conglomerate hotel chains and thus be very individual.

Keeping that in mind, students did have a brief image of what to expect from the system and had already known the possible functions and features that could arise, so they were still able to adapt their knowledge to the given situation, truly testing them as future managers.

Generally speaking, students have exclaimed they are satisfied with how the two courses prepare them for working in a contemporary work environment – be it a hotel, a travel agent, airline company or other.

CONCLUSION

The turbulent times we are witnessing have forced us to adapt and overcome the many obstacles constantly being thrown our way. Thanks to contemporary science and evolution, we have been introduced to a new age. That is the age of automation, globalisation, and constantly having to do everything in one's power to keep one's place on the market. Digital literacy has become a must in the world of modern management. The situation which we have found ourselves has, as such, "given birth" to the ability of constantly being connected to the Internet and, especially now, doing most, if not all of your work from inside the comfort of your home. One particularly interesting thing is the possibility of learning online and having all of the necessary books and materials available to wherever you are in their digital form. Thus, any individual can govern his/hers timeframe that is meant for education and be more efficient. In that way education truly can be an active process of constructing knowledge rather than acquiring it. So that any student can gain personal understanding, and not just be in the constant process of memorization of facts. And this is particularly important for education in the field of modern ICT, because of the constant need for implementation of knowledge and skills in everyday activities. Thus, the curriculum has been specifically made for the conditions of tomorrow – containing both theoretical and practical sides to help students in their goal to become modern managers.

In order to keep up, the courses of Business Informatics and ICT in hotel management and tourism are teaching students how to overcome obstacles by not only using the modern technology provided to them, but also find a logical way out of the situation they have found themselves in, and analysing the situation and its solutions before acting on them. The focus of the BI course is put on the use of Microsoft Office Suite, which is most-commonly found in a contemporary working environment, with the highlight put on three applications from its package. Those being MS Word, MS Excel, MS PowerPoint, followed by some open software alternatives. Apart from teaching how to use the programs, BI also teaches how to properly write emails, how to present, and make the best, environment-proof presentation. Furthermore, the ICT in Hotel Management and Tourism course teaches the basics of databases and information systems, their architecture, use, and elements along with real-life simulations in applications like Joomla and Fidelio making sure the students are fully equipped with the necessary know-how for their future occupation.

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