INFORMATICS EDUCATION OF MANAGERS IN TOURISM AS A BASIS FOR SUCCESSFUL INCLUSION IN THE WORKING ENVIRONMENT

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Abstract

Informatics is very important in contemporary life. This is especially true in the business world. Thus quality informatics education of all employees, especially of managers, is a must. Tertiary education should follow these requirements. In this paper we give an overview of several segments of this education that we consider important. Our experience is related to the education of managers in tourism, but the presented materials can easily be integrated into the general education of managers.

Key Words: *digital literacy, IT education, informatics, information systems, hotel management systems, practical work*
JEL classification: *I20*

Introduction

Information and communication technology (ICT) advancement has made a big change in everyday life of the modern man, as well as in all kinds of business functioning. The enhancements in ICT field in the last couple of decades has brought computing speed increase, hardware size decrease, both hardware and software costs reduction, and the multiplication of the reliability, compatibility and interoperability of different informational systems. At the same time, computer systems became more user-friendly and easy for everyday personal and business use. Modern business relies on this technology, and that is the main reason why knowledge and skills in the usage of these systems are very important for contemporary

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manager. Therefore, it is very clear that education of students (next generation of managers), as well as education of managers in field of informatics and information technologies (IT) in general is very important (Vasović & Milašinović, 2014).

In our work on IT education of future managers in tourism at the Faculty for Hotel Management and Tourism in Vrnjačka Banja, we have followed two main objectives:
  - First, to improve general IT skills and knowledge.
  - Second, to acquire knowledge about importance of information systems and communication technologies (ICT) use in modern business, the basic principles of their development and examples of good practice in their application in the work.

The speed of performing duties as one of the most important imperatives in managing today's business leads to the fact that it is highly desirable that all employees should be trained to independently perform as many tasks as possible. That is why we are dealing with the accomplishment of the first mentioned goal. This is especially true for contemporary managers, because, in the optimal case, they must be less dependent on the knowledge and skills of people around them for successful management. In addition, another important reason why managers need to be familiar with modern ICT flows is their responsibility for the adequate use of modern information systems and ICT in general. This is especially true for highly positioned managers who make strategic decisions to ensure business sustainability and competence.

In line with the changes brought by the development of the IT sector and in the way of teaching IT subjects, there have been changes since the Bologna Declaration was adopted. This is primarily reflected in the fact that the focus from learning the content is shifted to its use. Teachers are increasingly less concerned about presenting information, and they increasingly encourage students to search for information. More competencies are developed by solving specific problems. With the increased use of modern technologies, time and space constraints on learning are reduced, and more and more people are given the opportunity to find themselves in the role of teachers, as well as in the role of students (Vasović & Milašinović, 2014).

The development of ICT has brought a number of changes in the way of teaching. This is especially true for IT education. Today, more than ever

before, learning can happen wherever there is an opportunity. Students are no longer limited to learning materials only in an educational institution where the teacher is teaching it. They have a vast sea of resources available on the Internet. On the one hand, these resources encourage research, and, on the other hand, they may lead to a total confusion in the realm of students. That is why an appropriate teacher should be a guide in students' research activities.

The role of ICT in tourism business operation

Information is of crucial importance in tourism and hotel industry. The specificity of tourism lies in the fact that it is a service activity characterized by the fact that clients are not able to test services before they decide to buy them. The role of information systems here comes to be of special importance, because all this information must be collected efficiently, properly processed and adequately delivered to clients.

Implementation of information systems began in 1950, with the introduction of computer reservation systems (CRS), first in the airline business operations, and later in the hotel industry, rent-a-car and other branches of tourism (Kurt & Kurdoğlu, 2016).

In addition to CRS and its evolution into global distribution systems (GDS), geographic information systems (GIS), destination management systems (DMS) and various resources from the Internet are used for tourism purposes today (Xiaoqiu et al., 2003).

From day to day, the importance of having the right information at the right time in all areas of business, as well as for stakeholders on the side of the tourist offer, is more and more evident. There are two sides of the role of information systems. First, they serve as assistance to managers in tourism companies and to decision-makers in tourist organizations. Secondary, they provide information to clients, ie. potential tourists. The lack of the right information at the right time can be very harmful to the reputation and business operation of the companies in this industry. (Kraguljac et al., 2019)

Use of ICT and number of employees in today's business

According to data (Statistical Office of the Republic of Serbia, 2019), it is evident that the use of computers in companies in the Republic of Serbia,

the use of the Internet in business and the number of companies that own the website are constantly increasing.

Table 1: *Use of ICT in companies in the Republic of Serbia*

Year	Computers are used [%]	The Internet is used [%]	The website is used [%]
2006	97.3	90.2	52.9
2007	97.7	90.6	61.8
2008	97.7	91.5	68.9
2009	97.8	94.5	67
2010	97.8	96.8	67.5
2011	98.1	97.2	67.6
2012	98.7	97.7	73.8
2013	100	99.6	73.8
2014	100	100	74
2015	100	99.1	75.2
2016	99.8	99.8	80.8
2017	100	99.7	80.4
2018	99.3	99.8	82.6

Source: *Statistical Office of the Republic of Serbia (2019)*

The latest data (Eurostat, 2019) show that in Europe, in most countries, the number of employees is growing, and hence the demand for new workforce. This is further emphasized in the Republic of Serbia.

Table 2: *Labour input, total industry excluding construction (Index year 2010 = 100, seasonally adjusted)*

	2016 Q1	2016 Q2	2016 Q3	2016 Q4
Euro area (19 countries)	100.6	100.6	100.7	101
EU (28 countries)	100.8	100.9	101	101.5
Serbia	100.6	102	103.1	104.5
	2017 Q1	2017 Q2	2017 Q3	2017 Q4
Euro area (19 countries)	101.5	101.9	102.4	102.7
EU (28 countries)	102	102.3	102.8	103.2
Serbia	105.4	106.8	108.1	109.3

	2018 Q1	2018 Q2	2018 Q3	2018 Q4
Euro area (19 countries)	103.1	103.5	103.6	103.7
EU (28 countries)	103.7	104	104.1	104.2
Serbia	110.8	112.3	113.5	/

Source: *Eurostat (2019)*

Table 2 presents the index showing the development of labour input in the sector of industry (excluding construction). This index is related to the number of persons employed. The number of persons employed shows the development of employment in Industry. It can be defined as the total number of persons who work in the observation unit as well as persons who work outside the unit who belong to it and are paid by it. The index is presented in a calendar and seasonally adjusted.

The European Commission manages a range of initiatives that help small businesses in the tourism sector. Given the huge impact that digital technologies have on the sector, supporting access and use of ICT tools is a priority area for the Commission. The Commission is also involved in actions that aim to increase the responsiveness of education and training to labour market needs and help entrepreneurs gain the necessary skills to manage their businesses. The European Commission has implemented several actions to boost the competitiveness of small businesses in the European tourism sector, integrate them into global digital value chains, and improve their ability to create more jobs (European Commission, 2019).

Initial state

Students today enrolling faculties are surrounded with computers, multimedia content, smartphones and similar devices from birth. Therefore, it is quite expected that they are skilled in their use. The daily number of such devices in our environment is rapidly increasing. Almost all of the devices are connected to the Internet. According to Cisco systems, the below graph shows the estimated number of connected devices up to 2020.
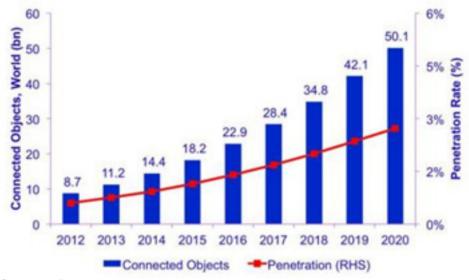
Figure 1: *Number of expected devices connected to the Internet*

Source: *Cisco, (www.cisco.com)*

For example, it is estimated that just IoT (Internet of Things) will have about 25 billion of devices by the year 2020 (Gartner, 2014) (Shamonsky, 2015). For years, we survey first year students in order to gain insight into their knowledge of basic areas of business informatics. The results showed that their knowledge is not at the expected level. This is quite pronounced given that they have studied all these areas during the previous levels of education.

The first part of entrance survey assesses general informatics knowledge. The sample at which the survey was conducted was initially about 100 students, and in time it has increased to 150. The percentage of correct answers to individual questions is quite diverse - from five to 95%. The overall average of the correct answers of 60-70% is not a satisfactory level because it should be a check of the most elementary knowledge.

Additional questions found that e-mail usage rose over time up to 95% of students. Similarly, percentage of active e-mail users rose up to 75%. Primary activity in the use of information technology for 85-95% of students is the use of social networks (Kraguljac & Milašinović, 2016). Earlier it was Facebook, and for the past three years mostly Instagram, although still more accurate statistics is available for Facebook (Internet World Stats, 2019).

Table 3: *Internet Stats and Facebook Usage in Europe, December 2017 Statistics*

EUROPE	Population 2018 Est.	Internet Users 31.12.2017	Penetration (% Population)	Users % in Europe	Facebook 31.12.2017
Albania	2,934,363	1,932,024	65.8 %	0.3 %	1,400,000
Andorra	76,965	67,305	87.4 %	0.0 %	42,000
Austria	8,751,820	7,695,168	87.9 %	1.1 %	3,700,000
Belarus	9,452,113	6,725,018	71.1 %	1.0 %	3,850,000
Belgium	11,498,519	10,857,126	94.4 %	1.5 %	6,500,000
Bosnia-Herzegovina	3,503,554	2,828,846	80.7 %	0.4 %	1,500,000
Bulgaria	7,036,848	4,663,065	66.3 %	0.7 %	3,300,000
Croatia	4,164,783	3,787,838	90.9 %	0.5 %	1,800,000
Cyprus	1,189,085	971,369	81.7%	0.1 %	870,000
Czech Republic	10,625,250	9,323,428	87.7 %	1.3 %	4,600,000
Denmark	5,754,356	5,574,770	96.9 %	0.8 %	3,700,000
Estonia	1,306,788	1,276,521	97.7 %	0.2 %	620,000
Faroe Islands	49,290	47,515	96.4 %	0.0 %	33,000
Finland	5,542,517	5,225,678	94.3 %	0.7 %	2,700,000
France	65,233,271	60,421,689	92.6 %	8.6 %	33,000,000
Germany	82,293,457	79,127,551	96.2 %	11.2 %	31,000,000
Gibraltar	34,571	32,654	94.5 %	0.0 %	23,000
Greece	11,142,161	7,815,926	70.1 %	1.1 %	5,000,000
Guernsey & Alderney	66,433	55,050	82.9 %	0.0 %	34,000
Hungary	9,688,847	8,588,776	88.6 %	1.2 %	5,300,000
Iceland	337,780	334,303	99.0 %	0.1 %	250,000
Ireland	4,803,748	4,453,436	92.7 %	0.6 %	2,700,000
Italy	59,290,969	54,798,299	92.4 %	7.8 %	30,000,000
Jersey	99,650	70,000	70.2 %	0.0 %	63,000
Kosovo	1,895,250	1,523,373	80.4 %	0.2 %	910,000
Latvia	1,929,938	1,663,739	86.2 %	0.2 %	740,000
Liechtenstein	37,922	37,322	98.4 %	0.0 %	14,000
Lithuania	2,876,475	2,599,678	90.4 %	0.4 %	1,400,000
Luxembourg	590,321	572,242	96.9 %	0.1 %	320,000
Macedonia	2,085,051	1,583,315	75.9 %	0.2 %	1,000,000
Malta	432,089	360,056	83.3 %	0.1 %	320,000
Man, Isle of	84,831	52,000	61.3 %	0.0 %	50,000
Moldova	4,041,065	2,878,794	71.2 %	0.4 %	800,000
Monaco	38,695	36,949	95.5 %	0.0 %	13,000
Montenegro	629,219	439,624	69.9 %	0.1 %	320,000

EUROPE	Population 2018 Est.	Internet Users 31.12.2017	Penetration (% Population)	Users % in Europe	Facebook 31.12.2017
Netherlands	17,084,459	16,383,879	95.9 %	2.3 %	9,800,000
Norway	5,353,363	5,311,892	99.2 %	0.8 %	3,400,000
Poland	38,104,832	29,757,099	78.1 %	4.2 %	14,000,000
Portugal	10,291,196	8,015,519	77.9 %	1.1 %	5,800,000
Romania	19,580,634	14,387,477	73.5 %	2.0 %	8,900,000
Russia	143,964,709	109,552,842	76.1 %	15.5 %	13,100,000
San Marino	33,400	17,610	52.7 %	0.0 %	7,900
Serbia	8,762,027	6,325,816	72.2 %	0.9 %	3,400,000
Slovakia	5,449,816	4,629,641	85.0 %	0.7 %	3,200,000
Slovenia	2,081,260	1,663,795	79.9 %	0.2 %	910,000
Spain	46,397,452	42,961,230	92.6 %	6.1 %	23,000,000
Svalbard & Jan Mayen	2,583	1,700	65.8 %	0.0 %	1,700
Sweden	9,982,709	9,653,776	96.7 %	1.4 %	6,300,000
Switzerland	8,544,034	7,776,749	91.0 %	1.1 %	3,700,000
Turkey	81,916,871	56,000,000	68.4 %	7.9 %	44,000,000
Ukraine	44,009,214	40,912,381	93.0 %	5.8 %	9,500,000
United Kingdom	66,573,504	63,061,419	94.7 %	8.9 %	44,000,000
Vatican City State	792	480	60.6 %	0.0 %	20
TOTAL EUROPE	827,650,849	704,833,752	85.2 %	100.0 %	340,891,620

Source: *Internet World Stats, (www.internetworldstats.com)*

Statistics show that, for example, about 70% of population in Serbia are users of Facebook. However, most students do not use freely available resources for learning on the Internet. If they use it, it is reduced to video lessons on YouTube. It is problematic that students never used or heard about open online courses from well-known world-class institutions.

It can almost be said that the use of the Internet for educational purposes is reduced to the most basic search on Google and choosing one of the first few search results.

Teaching objectives

Following the golden educational rule "from near to far", we realized the first abovementioned teaching objective in undergraduate academic subject Business Informatics at the first year of studies. Students that

attend this teaching course will improve the knowledge gained in higher grades of primary school and then during high school education. Main aspects of this teaching course are basics of IT. Thus usage of operating system (Windows), WYSIWYG text processing (Microsoft Word, LibreOffice Writer, Google Document), spreadsheets (Microsoft Excel, LibreOffice Calc, Google Spreadsheet), presentations (Microsoft PowerPoint, LibreOffice Impress, Google Presentation) and the Internet through two basic services (web and email) are included. Many faculties have the similar teaching program concerning Informatics in first year of study. We tend to look at this teaching course as "digital literacy".

The basic Informatics knowledge and skills that students gain in the first year of study should be extended afterwards. Information systems are backbone of modern business and contemporary managers should be familiar with concepts of these systems. We found that the fourth year of studies is the most appropriate for the realization of the second abovementioned teaching objective. In teaching course Information and Communication Technologies in Hotel Management and Tourism, our students should master the concepts of information systems in modern business. In this academic subject focus is on practical work as well. We try to cover these main areas:
  - Information systems and databases in general,
  - The information systems for destinations management,
  - Hotel management information systems,
  - Content management systems (CMS).

Natural focus of all mentioned fields is to adapt students to the specific business environment in the hotel management and tourism industry. On the other hand, although meant for tourism students, this teaching course is applicable to management student of any particular field.

Obstacles

It is almost impossible to argue against the need of ICT in contemporary education, many authors have the very same conclusion on this issue (e.g. Sari&Mahmutoglu, 2013). So, it is necessary to use ICT in teaching on one hand, and on the other there is still a large number of reluctant teachers that are not so willing to modernize their teaching approach (Sukanta, 2012).

The International Computer and Information Literacy Study (ICILS) research, last carried out in 2013, shows that 25% of school-age respondents show a low level of knowledge of information and communication technology (ICT) skills (European Commission, 2019). Thus we could observe that one portion of students is reluctant to ICT as well, and that the similar trend is present in many countries.

The European Parliament and the Council of the European Union as one of the eight key competences have declared these skills important for lifelong learning (European Parliament & Council of the European Union, 2006).

Suggested approach

Informatics education of contemporary manager should be orientated towards practice. Theoretical background needs to be on the basic level for majority of students. Naturally for those who are willing to understand theoretical basis better, guideline and all the necessary teaching materials should be provided. On the other hand good "IT skills" of all the students should be at the highest possible level. In the modern world, manager tends to be operational almost all the time, thus his/her "agility" with the contemporary technology needs to be good. In these circumstances, students became aware of the benefits of this approach to IT education.

Figuratively speaking, there are little chances to have a wolf set for challenges if we keep the animal in the zoo all the time. Similarly, there are no good chances to have resourceful managers, if there is no problem solving in their educational process. In that sense, the role of teacher should be changed towards a role of guide. The teachers should advise students how to use modern technologies effectively for collecting, processing, interpreting information and how to present them.

In line with the development of web 2.0 technologies, there are more and more pages on the Internet where the focus is on user-generated content, usability and cooperation. This improves cooperation between students, but also between students and teachers. Following the situation in which today's touch-sensitive devices provide significant support to day-to-day operations, tablet devices are introduced in the exercises. Work is organized so that each student has his assigned tablet in the course of practical work (Kraguljac & Milašinović, 2017b). Since the tablets are not so suitable for creating a new content, the program of teaching subject

Business Informatics has been partially changed to include content that students can more easily use and share with each other.

After consolidating the basic practical IT knowledge in the field of text processing, spreadsheets, presentation and usage of the operating system and the Internet in the fourth year of study, the focus is shifted to areas that are more specific in the field of hotel management and tourism.

This includes Information Systems (IS) that cover the business of Destination Management Organizations (DMO) whose main goals are successful marketing of destination, constant increase of visitation volume, engagement of large investors, and spreading of the positive destination image (Kraguljac & Milašinović, 2017a).

Databases are an area that is much closer to IT students than students of hotel and tourism. Nevertheless, the trends in modern business make it imperative that our students, as future managers, have to master the basics of the databases. For this purpose, students are introduced to specialized software called the database management system (DBMS). In our case, that's it well known program Microsoft Access. There are several reasons why this program was selected. The user interface is the same as in other programs from the Microsoft Office package. Microsoft Access presents all-in-one program for working with databases. It can be used for tables' design, establishing connections between them, and creation of queries, forms and reports.

According to various estimates there are nearly 1.5 billion websites online today. And there are circa 230 million unique domains. The numbers are, of course, astoundingly huge.

Most of these sites are run by some of the content management systems (CMS). CMS is online software that enables anyone to build a personal or business website without having to write a line of code. The fact that no programming knowledge is required in order to build and later use a website based on a CMS is the main reason of their popularity. The most used CMS today are WordPress, Joomla, and Drupal. According to the latest data, WordPress controls nearly 60% of the CMS market and nearly 30% of all websites. Joomla and Drupal have approximately 6.6% and 4.6% percent of the CMS market share.

Our students learn structure of contemporary CMS web site through the living example of the web store realized with Joomla CMS. During work, they get different roles so they have opportunity to know CMS platforms in different ways. This is opportunity that they see how different employees, commercialists, managers, PR staff, warehouse clerks, etc. use CMS in their work.

Another example which students encounter in teaching exercises is the website of the hotel realized in WordPress. This site has all the features of the usual site for this purpose, including a complete booking system.

Hotel management information systems are represented in teaching through work in the global software package Fidelio and in the domestic package adapted to the Serbian market named ProSoft.

Students learn to perform all important activities related to the monitoring and management of all hotel operations from customer relationship management (CRM), reservations, and front office to cashiering, rooms' management, conference, and catering management. On this way complete stay of the guest in hotel is covered.

A few practical notes on teaching material and software platforms

As discussed above, the main point of quality education in field of information and communication technologies is to have adequate approach to the problem. This can be said for education in probably all other fields as well. However due to the specific demands of information and communication technologies education, in educational process all the necessary hardware and software platforms must be incorporated. That is why even with a good approach to the problem, teachers in old days had to struggle with acquiring the necessary software. So even in near past - ten to fifteen years ago teachers had to rely solely on proprietary commercial software packages for the task. Nowadays, however, with the very same initial position (good approach / well written curriculum) teacher have an opportunity to have free software solutions for almost all the important segments of teaching materials.

On top of this, a myriad of individual materials should be added, as well as also complete courses free of charge available on the Internet.

Further work

In line with modern trends in education technology, one of the directions for further work will be related to learning by exploration and to the creation of an environment in which such learning will be effectively implemented. To achieve this, we will use all kind of multimedia sources and various levels of real work environment simulations. This includes, but is not limited to, hypertext, images, audio, video, animations, and simulations.

In order to gain the necessary knowledge in this way, we will try to ensure that students have all the necessary information available through the multimedia and accessible environment in which they can acquire and train the desired skills. The more we become able to get students to learn by exploration, they will be more willing and more motivated to continue to apply this kind of training when they move from academic to working environment. In this way all individuals (eg. students, or people from their working environment) would be able to manage their own time for learning.

An important role of teachers in this process will be to guide students who have not yet developed skills to effectively search for the information needed in the virtually infinite space of the Internet, how to distinguish relevant information from those that are not, and how to get the best information out of the information that they have found and develop new knowledge. In particular, it will be important to pay sufficient attention to the prevention of situations where students, during the process of searching for useful information, "lose their way" and start to deal with content that does not bring them educational benefits.

As students vary widely in cognitive and other characteristics, in parallel with the mentioned activities, special attention needs to be paid to the preparation of the content that will be adapted to all of them. This will ensure that more advanced students are not bored and, on the other hand, that those who are less capable do not lose motivation.

Conclusion

Modern society demands adaptation of persons in almost any business position to contemporary (ever changing) technology. On the other hand, a lack of time is often present in daily activities in the life of a modern

man. This study presents this issue in detail, as well as our approach to contemporary informatics education.

Although comparison between old and modern school of teaching may have pros and cons on both sides, business dictates the "learning tempo" - thus we found modern method more applicable.

As presented in this study, a modern approach is very important: students can distribute their time better (very usable for people that have to spend much time in their workplace), and teachers can apply this method in practice almost without any financial costs, due to a wide variety of free resources.

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