E-business curriculum development at the Faculty of Economics, University “Ss. Cyril and Methodius” in Skopje

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The Faculty of Economics at the University “Ss. Cyril and Methodius” in Skopje is the leading institution in the country educating students in different business and economics areas. Information Technology as a core subject was introduced more than a decade ago, following the trend in the developed countries. The content and the name of the subject have been changed in accordance with the rapid changes in the ICTs. A step forward was made when the Faculty decided to open a new department of e-business with substantial help of the foreign partners and Tempus project grant. The new department has distinctive features such as English as the official language, working in small groups, project-oriented learning, and close cooperation with the business community. There is a constant high interest among students to enrol on this department and the number of students reached almost 500. Starting in October 2007, interested professionals can attend a new master programme in e-business by distance learning also supported by Tempus grant. The postgraduate students will have the chance to study in three different western countries and universities and gain three different diplomas. To support the impression that the Faculty is progressing in the right direction, a survey was conducted among students asking relevant questions and the results showed that they are all willing to learn more about use of ICTs and to use them in other subjects. Also, most of them expressed their satisfaction with using the open source platform Zephyr for communication purposes. As a conclusion, we can stress out that with the development of the new department of e-business at the Faculty of Economics, students and professionals have the opportunity to study many aspects of e-business and to follow the trends in the world knowledge-based economy.

Keywords

Curriculum development, E-business, Project-oriented learning

1. Introduction

The main aim of the paper is to elaborate the current positive developments in adoption of the e-business curriculum at the undergraduate and postgraduate levels at the Faculty of Economics, University “Ss. Cyril and Methodius” in Skopje.

The Faculty is the oldest and the most distinguished country leader in higher education, research and consultancy in business and economics. The current number of students is over 5500, distributed in 7 undergraduate departments and 10 postgraduate departments. The Faculty also offers a PhD degree in economics. E-business curriculum is incorporated on undergraduate level and postgraduate level with separate departments.

Adoption of IT modules at the Faculty has started in 1989, with adoption of a new subject with strong ICT content for all students as one of the fundamental subjects in the curriculum. The content and the name of the course have evolved in time. In the beginning the name was *Programming of computers*, followed by *Using of computers* and finally *Information technologies*. Those changes were in line with the development trends in ICT sector and needs of the business community.

The Faculty established a new undergraduate department for e-business in 2002 and a new Master of e-business by distance learning in 2007. Both e-business studies are significantly different from the rest of the departments from several aspects: intensive use of ICT, internationalization of the programmes, adoption of new teaching and learning methods and design of the studies. The mission of the department is to provide the international business world with highly skilled e-business professionals who, acting on the cutting edge of business and ICT, improve the effectiveness of organizations by high quality programs in Marketing, Management and ICT.

This contemporary Faculty's orientation is a direct outcome of the new trends in economy which are forced by the intensive use of ICT and the fact that education is undoubtedly one of the key areas in encouraging and supporting the development of IT society and knowledge-based economy, as a world trend of the modern societies. Namely, the development of an IT society and a knowledge-based economy requires educated people. Education must be a leader in the promotion of the IT society and the creator of experts and competent staff who will be able to meet the challenges and the needs of a knowledge-based economy. The start and implementation of new e-business curricula coincides with the implementation of the following national strategies and programmes: The National Strategy for Information Society Development [1], The National Strategy for Development of Electronic Communications with IT [2] and Programme for Developing ICT in Education [3]. In the frameworks of these programmes it is stressed that there is an evident shortage of human resources capable to manage the business processes in the term of intensive use of ICT, i.e. to successfully develop the e-business modules of company work. This segment is considered to be the crucial one for successful development of the information society in general. Also, the need for additional education in the field of e-business has been permanently pointed out, especially for the professionals who have completed their education several years ago, when the development of the information society in the Republic wasn't so popular. The main idea behind all these is that the development of the e-business will help the companies to increase their productivity and competitiveness in the global markets.

2. Background

Within the former Yugoslavia, our country was one of the least developed republics, which was true for the ICT industry as well. During the nineties, the ICT market and industry in the country (and the economy as a whole) underwent a number of shocks; transition, privatization and restructuring (deindustrialization that ended in jobs lost), and serious political turmoil related to ethnic issues in the neighboring countries and the war in 2001. All these, together with absence of effective government's industrial policy and fate of small country's demand for ICT related products and services, resulted in ICT industry lagging well behind the more developed countries of the former state, and being almost incomparable with ICT industry performances in developed world.

The IT industry, with the closing of already weak and small IT firms in privatization jungle, was further atomized. The former personnel of these companies founded numerous new tiny IT companies that lacked the technology and managerial expertise and marketing skills as well as financial strength. Therefore, the majority of them have been oriented towards sales, basic IT services provision, PC assembly and software development for local companies.

More successful among them collaborated with global technology vendors, acquired needed skills and grew fast. International firms at the beginning were reluctant to directly enter and invest into small and insecure country market, so they opened sales departments. There has not been an investment in green-field production and only a few software development centers are operating now. This, in turn, made the things somewhat easier for local ICT players.

The situation in the telecom sector was entirely different. Rising demand for telecom (carrier) services by households, companies and public sector and profit perspectives fueled FDI inflow into the country. The incumbent was sold to Matav, together with its mobile division Mobimak (T-mobile), and then Greek OTE entered as a second provider Cosmofon. We are expecting the start of the third mobile operator in October this year. Briefly, these developments influenced the current structure of the ICT industry in the country. This introduction was necessary because the demand of ICT workforce is under direct influence of the developments in the industry. In addition, the demand of workforce with different ICT related skills in all other industries in constantly growing. That means that there is a market for e-business specialists too.

In order to analyze the ICT industry there are some methodological problems that are still unresolved in the official statistics. Therefore, we will use other sources of data that are closer to the real situation. In 2004, the ICT firms, constituting 1.3% of the total number of enterprises, contributed with 5.8% to the total country's businesses revenue and with estimated 11.0% to its overall value added [8]. In the last 5 years, the percentage of ICT imports in total imports exceeds percentage ICT exports in total for an average of 1% [8]. Employed in ICT industry accounted for the 2.4% of total businesses workforce [8]. In 2004, the total ICT market reached $523.93 million in value [6]. According the same source in 2007 the ICT market is expected to exceed $700 million. ICT market grew by some 15% year-on-year [6]. The telecommunications spending (88.0% of the overall ICT market in 2004), was by far the prevailing market segment [6]. Such a dominance of the telecom sector could be attributed to foreign investments in telecoms corresponding with a surging demand for telecom services. On the other hand, the weak relative position of the IT sector reflects the poor development of the country's economy and a low overall purchasing power.

During 2004, a Macedonian spent an average of $254 on ICT products and services. Some estimates are that in 2006 the average spending is $280 [6].

There were 526 enterprises and 5,936 jobs in the ICT industry in 2004 and the estimates for 2006 are 620 firms and more than 6500 employees [8].

In the same year (2004), ICT workforce rose by 3.0% (comparable rise for the country, as a whole was 5.9%) [8]. However, the 2004 dynamics of these indicators for the IT and telecom sectors largely differ. The IT sector workforce increased by 16.8% (within it, especially high rates were recorded for IT hardware and software categories with their revenues exploding by 68.5% and 66.4%, respectively) but at the same time, the telecom sector witnessed the revenue growth rate of 4.5%, and 0.1% decline in workforce [8]. The structure of ICT companies according the number of employees is presented in Table 1.

Within the highly dispersed IT segment the bulk of companies (366) have been sales (channels) and services oriented [7]. Within this the IT and telecom component witnessed different patterns.

The average gross monthly salary in the ICT industry in Macedonia in 2004 grossed around 570 euros. Within the ICT industry, the highest gross salary was recorded in the software category, amounting to 900 euros [7]. The remaining categories of the ICT industry reported below-average industry salaries. However, in the last five years the average rate of growth is 3% [7].

Table 1 The structure of ICT companies according the number of employees [adapted from 7]

Employee Categories	# of Companies	# of Employees
Over 200	3	3,698
Share (%)	0.6%	62.3%
100-200	0	0
Share (%)	0.0%	0.0%
10-99	56	1230
Share (%)	10.6%	20,72%
5-9	58	378
Share (%)	11.0%	6.4%
1-4	354	633
Share (%)	67.3%	10.7%
0	55	0
Share (%)	10.5%	0.0%
Total	526	5,936

In order to get insights about the demand of ICT workforce with wide range of skills including e-business, a survey was conducted in more than 80 companies from different industries in the beginning of 2005. The main result is that there is a constant shortage of skilled ICT workers. We will present some of the most striking results of the survey. Firstly, the demand for skilled ICT workers from different profiles in 2007 will be over 700, but no more than 400 graduates are expected from all higher institutions educating those profiles [5]. The main employers of ICT workers are still ICT firms, but in near future the demand for ICT firms in other firms is expected to grow.

The role of ICT in organizations has been changing. ICT has an active role in performing company functions and accelerates the integration of different functional areas within the company. The possibilities of e-business and more efficient links with employees and suppliers have changed the way business and IT managers think about what computing and ICT can do to improve business processes. Prior to the internet, business managers used to assume that IT people would alert them to new techniques that might improve business processes. Similarly, IT people tended to focus on tactics and technologies and not on business strategies. Today, however, both business executives and IT managers are more interested in the potential of the Internet, ICT and in strategic issues. In addition, ICT professionals are involved in mixed and cross-functional business teams. ICT is the main driving force and facilitator of the business activities and it is crucial in improving the productivity and efficiency of business processes and in promoting innovation in the enterprises. However, mere investment in ICT is not enough, as technology by itself does not automatically lead to substantial efficiency (business) gains. In the hiring process, different skills are tested and required from different employers. Respondents were asked to rank three most important skills (six options available) required from new applicants starting from 1 (the most important) to 3 (the least important). From their employees, firms expect a combination of technical skills, educational level, business skills and soft skills. According to the survey results, our ICT workforce excels at customer service skills and understanding company's goals, which have the highest grades. Concerning the needs for business skills in the future, emphasis is given on the better project management, planning and marketing/sales skills. This in not surprising, taking in mind that the most of the IT firms are small and in the same time owners and managers, who represent half of the respondents, require mixed skills from future employees in the ICT fields.

There is mutual consensus that it is very important to improve the quality of the higher education and 25 respondents stressed out that argument. The recommendations are focused on several matters:

- The academe should train students in what is being demanded by the companies
- The companies should offer structured value adding internships, on the job training.
- The ICT industry should co-design the ICT curricula of the universities

From the results, it can be concluded that the employers equally prefer both university degrees and ICT technical certificates.

Changes in the educational process, which are the main issue of the industry, require time and are evolutionary by their nature. It is well known fact that the ICT industry is the fastest growing and the most globalized part of the economy. Opportunities are changing quickly, so actions are needed right now and in the right direction. The outcomes of the survey can determine future policies and measures in order to achieve the desired goals of the ICT industry in the Republic.

3. E-business studies

The E-business department launched its programme in school year 2002/2003. This department is a product of joint efforts by: Faculty of Economics at University “Ss. Cyril and Methodius”, Fontys University of Applied Sciences in Eindhoven, The Netherlands and Hogeschool West Vlaanderen from Bruges, Belgium supported by Tempus CD_JEP 17030-2002: "E-Business Management for the Faculty of Economics, Skopje". After graduation, the students are awarded with the bachelors diploma for economists specialised in e-business. The programme can be roughly divided into two main parts. In the first two years, besides 11 subjects that are core subjects at the Faculty, there are four newly developed subjects (Introduction to e-business, Foundations of the digital economy, Internet marketing and Marketing communications). The studies in the last two years are fully devoted to specialised e-business subjects. These subjects are following two separate lines. The first line is formed of ICT modules (Internet architecture, Web design, Accessing applications over Internet). The second line consists of modules that deal with the management and marketing aspects of e-business (Management of e-business I and II, Operational Excellence, Project management, Supply chain management, Multichannel marketing). Legal and ethical aspects of the Internet are also included as a separate module. During the last semester, the students are focused on state-of-the-art problems in the field and on their graduation theses as a capstone experience. Several specific features are differentiating this department from the rest of the departments at the Faculty.

- E-business specific modules were developed by teams comprised of foreign and domestic professors who attended specially designed lectures for project-oriented learning, competencies development and business English. For the first generation of students (57) foreign partners’ professors taught all e-business modules.
- Modules are taught only partially in the traditional manner whereas case studies from domestic and international experience are also analyzed. Students are obliged to work on projects in teams or individually. In some subjects, projects’ themes are defined in accordance with the most contemporary issues covered in the curriculum. However, for most of the subjects, in order to pass, the students have to find business placements in firms, to perform certain e-business transformation tasks for the firm, and to write a report (Figure 1). The Faculty signed an agreement for cooperation with MASIT, the Chamber of commerce for IT. Students are welcome to do internship programmes at MASIT firms, and firms with their suggestions are helping to improve the curriculum. In this way, one of the main recommendations of the business community has been anticipated.

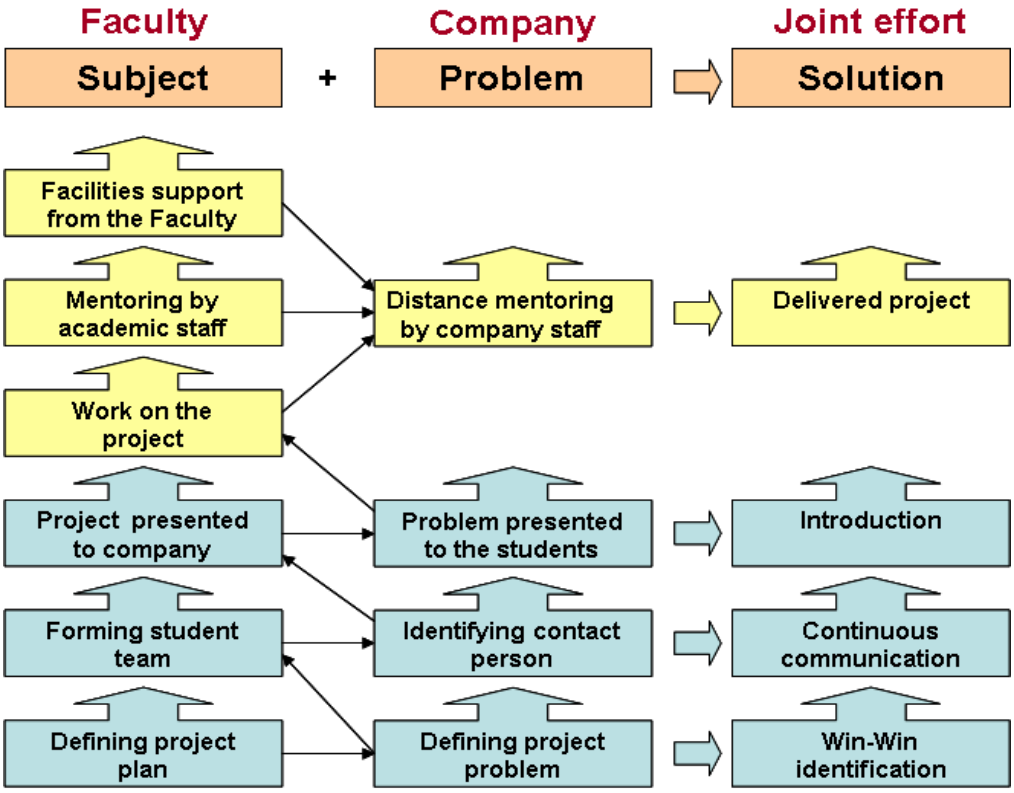

Figure 1 Project-oriented learning – on job training

- Graduation thesis must be applicable, so the students work for a longer period in firms. For example, currently several forth year students are working in the Customs on business processes redesign problems as their graduation task.
- At the very beginning of the establishment of the department, a web site was designed [4]. The web is updated and maintained by the students. In order to facilitate communication, to transfer materials, announcements, results from tests/exams, department students and staff use a Dokeos open source platform, Zephyr.
- The Faculty equipped a computer laboratory with 51 computers with state-of-the-art e-business software products.
- Official working language on the department is English. This feature enables even foreign students to study on the department. The international dimension of the department is obvious not only by English as a working language, but also by a permanent regular engagement of foreign professors from collaborating institutions.
- The interest among students for the department is growing. In 2006, 170 candidates applied and 98 candidates accepted in the state financed quota had 100 points on the entrance test. Additional 52 candidates with co-financing were accepted with a minimum of 93 points. This year, 193 candidates applied, and 102 among them have maximum points. Currently, there are 485 students on the department.

The master of e-business management by distance learning at the Faculty of Economics is financially supported by new project TEMPUS JEP_40093_2005. Besides the before mentioned partners from previous project in the new project IAE de Paris- Graduate Business School of Sorbonne is consortium partner too. Therefore, the postgraduate students will be able to acquire diplomas for master's degrees from three institutions, from Skopje, Eindhoven and Paris.

The number of graduates in computer studies across the EU-27 rose from 60000 in 1998 to 137000 in 2004 – a total increase of 128% [9]. Although this is a large rise, it is still not sufficient. For example, the proportion of computer graduates in Europe in 2004 was 4% compared to 5% in the USA and 6% in Korea [9]. Having in mind the tendency of increased needs of human resources from the field of e-business in the country and its environment, these postgraduate studies will enable the graduate students to gain specialized knowledge and skills related to the e-business, which are crucial for the today's effective and competitive working of the companies. The application of long distance learning will enable effective studying and implementation of the principle of inclusiveness. This will be beneficial for the candidates who live and work in the inner parts of the country and abroad, as well as for other candidates. At the same time, this will be a possibility for the postgraduate studies to gain an international profile.

The master is designed over three pillars: processes, people and technology, consisting of 9 modules and a dissertation project, totalling up to 60 ECTS. Each module will be developed and taught by an international team of domestic and partners' professors that will be responsible for two thirds of each module's content.

Students' mobility will be an integral part of the piloting of the master course. At the beginning of each semester, the master students will join together for a period of two weeks to be thoroughly introduced into three modules for that semester. Also these intensive courses should be regarded as periods in which the students work together and can reflect on their own and each others competencies.

After this session, students will complete each module with 115 hours of studying through distance learning platform and working on real-life projects in companies.

In order to transform the developed modules into a module that is fit for e-learning, a distance learning centre will be established at the Faculty and staff will be trained.

The role of the academic staff is changed when applying distance learning. All academic staff should familiarise themselves with the general competencies that are required for all e-learning professionals: basic understanding of e-learning and e-learning principles are essential. Besides that, e-tutoring competencies (digital didactics) are crucial for the success of this project and beyond. Academic staff should be introduced in topics such as planning for online tutoring, providing online tutoring and evaluation online tutoring. The academic staff has to be trained/prepared for this.

To adhere to the Bologna Process agreements, consortium partners explicitly include the accreditation of the master by an EU authority in the project. Domestic authorities accredited the master and Dutch/EU accreditation according NVAO/NQA is in process, providing the master a true international profile, which attracts international students.

4. Evaluation

In order to get more information about students' opinions and satisfaction of the current situation, a survey was conducted comprised of short questionnaire. In total 113 third year students were surveyed (30 from e-business department, 50 from departments that have the subject Information technologies and 30 students from the departments that don't have Information technologies in their curriculum).

E-business students were asked whether they are satisfied with Zephyr platform and 87% said that they are and all of them express their interest to use the platform in other non e-business subjects. When asked whether they are using the Internet and software in other non e-business subjects, 53% said that they are using them often. More than half of them expressed their interest to continue their education on Master of e-business management at the Faculty.

Several specific questions were addressed to students that have Information technologies in their curriculum and 58% said that they are using the Internet and computers only occasionally in other subjects. It is obvious that e-business courses forced the usage of the internet and IT in the other non IT courses. It is important that 86% feel the need for extra knowledge in information technologies and 92% said that these technologies are not enough applied in other subjects. In addition, 22% answered that they attended specialised computer courses.

Large portion of students that do not have Information technologies expressed their need for that module (91%) and the need to use the Internet and computer software in other subjects (72%). When asked where did they get their computer knowledge from, 47% answered "from high school", 37, 5% through self-study and the rest from specialised courses.

Most of the students (91%) from all of the departments think that an Internet based communication channel would ease their communication with the staff and student's office. All surveyed when asked where they are using the Internet most often, 72% answered from home, 16% at the Faculty and 12% at Internet centres.

5. Conclusions

E-business education at the Faculty with its unique design of the teaching and learning processes and close cooperation with the business community, proved to be attractive for students and in line with the current global trends and intentions and policy measures of the Government. It will play a crucial direct role in the improvement of e-skills of businesses and a more indirect role in the encouragement of cooperation among businesses and the promotion of a positive business climate for innovation. One could think of:

- To counteract the e-business skill-shortages in the country, opportunities for vocational training and for ICT product demonstrations to companies should be offered.
- The knowledge transfer between research centres (universities) and enterprises should be promoted.
- Information should be provided to businesses on how to assess cost-benefits of e-business. Especially SMEs should be helped to better understand organisational aspects of e-business, not just focused on technology.
- Good practices should be identified and their benefits communicated to businesses.
- The use of e-learning should be stimulated, especially in the master.

When looking at these activities that all contribute to an improvement of the level of e-business in the country, it becomes clear why the Faculty of Economics in Skopje puts so much emphasis on becoming a knowledge centre for e-business management in the (Balkan) region. By providing the master of e-business curriculum (partly) through a distance learning concept, the barriers for managers to participate in a (master) study are taken away. Furthermore, having (one of it's) managers follow the master of e-business management, a company can immediately benefit from the experiences being exchanged during the course.

With adoption of project-oriented learning, gains could be recognized for all stakeholders: students, companies, the Faculty. Students can implement the theoretical knowledge in real life situations, acquiring practical knowledge about the developments in e-business area in the country, in the region and in the World; establish contacts with companies, future employers. Companies can get solutions for their problems for free, then identify possible future employees and have overview of the current academic curricula influencing on it. Finally, the Faculty with implementing the project-oriented studying identifies the needs of the companies and adjusting the curricula, developing "ready to do business" students.

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