

International Conference on
Employability of Graduates & Higher Education Management Systems
Vienna, 22 - 23 September 2011

A VIEW ON NEW SKILLS FOR BETTER EMPLOYABILITY

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Abstract:

The employability of graduates depends on a country's development level. However, the development of new skills of the graduates can also improve the progress of employability and, consequently, of a country. We would like to focus on the skills which are necessary for better employability and stakeholders which play important roles in the achievement of some skills. Of course, the role of formal education in the achievement of certain skills and competences is absolutely essential. Anyhow, the role of career centers, incubators of technical faculties, IAESTE and similar institutions is becoming more and more recognized. Some strategies, established at the level of states and higher education institutions can significantly contribute to finding the solution of employability problem in the right way.

1. RELATIONS BETWEEN LEARNING AND EMPLOYABILITY

Discussing the employability problem in Serbia, let us start from some statistical data published upon census roll in 2002 (see [BS]). Although there is a well developed primary school system and primary education has been free and imposed by law for more that fifty years, there existed in Serbia 232.925 illiterate citizens older than 10 years (3.4%). Educational structure was also unfavorable – almost 22% of citizens older than 15 had not completed elementary education, and almost 24% had only elementary education. Thus almost 46% citizens were at the level of elementary education or below it. The situation hasn't improved much by now. On the other hand,

we can see that the highest percent of unemployed individuals are those with secondary schooling (24.2%) and primary schooling (21%) (see [NA]). Moreover, some researches in 2002 showed that 69% of paupers were people with primary schooling or incomplete secondary schooling. Among citizens with higher education the number of paupers is much smaller, only 2% (see [PI]).

Consequently, we can easily conclude that the lack of good education of an individual is closely related to his/her social isolation. Therefore, it is important to provide at least minimal level of education for everyone. It might be organized through special programs in specialized institutions, as well as through special educational programs in companies where these individuals work. Comparable experiences show that some requirements to periodically organize capacity building, defined by the work agreement, have very good psychological effect to employees.

To overcome the problems of employability and sustainability in labor market, it is necessary to become familiar with basic skills, but also to be permanently ready to improve one's own knowledge and competences. A continuous technological development, for example, also dictates individual capacity buildings in order to avail of the new technologies. Among employers and employees it is necessary to promote the awareness of the fact that each position at the same time serves for educational purposes.

Lifelong learning should exist not only for the purpose of employability, but also for the purpose of continuous education, making progress in terms of knowledge and vocational training.

Having in mind all previously mentioned facts, it is simple to conclude that the employability problem and one's working position on more and more demanding labor market are directly connected with various types of learning, but most of all with formal education. There are many institutions in Serbia, as well as in countries of European Community, which are responsible for learning process (see for example [EE], [CD], [WP], [BD], [LS], [M], [IL], [CR], [NSZ], [PSV], etc.). Among these institutions, the University of Belgrade is a very important one. We would also like to point out that the University of Belgrade is one of the oldest and biggest higher education institutions in this region.

Hence we present in this Section some of results of this University in the area of formal education in a very condensed way. With more details we present some types of non-formal education and informal learning which are important in acquiring the skills that can help in solving the employability problem, as well as in saving one's working position. Section 2 is devoted to the international students internship. Section 3 is devoted to skills developed in the University center for career and students counseling. Entrepreneurship is one of competences which are essential for students of engineering and technology. Therefore, we devote Section 4 to the presentation of the development of student entrepreneurship in Business Technology Incubator of Technical Faculties.

Since Serbia signed Bologna Declaration [BD] in 2003, we have legislated the law on higher education according to Bologna Declaration in the period 2005-2010 (see [ZVO], [ZVOa]). All bodies important for the organization of higher education have

been established and they work actively. We would like to stress that the National Council of Higher Education has established standards and procedures for accreditation of higher education institutions and study programs [PA]. Accordingly, each study program has to involve recognizable general and subject-specific competences in terms of vocational, scientific or artistic occupations. Internship is an obligatory part of all study programs in technical and technological sciences. The University of Belgrade and 16 other universities accredited all study programs at their institutions, which shows that all standards have been correctly satisfied. It allows mobility of graduates and students and we now belong to the EHEA. More details about various types of formal and informal education, as well as informal learning developed in the University of Belgrade, have been presented in [NB].

2. INTERNATIONAL STUDENT INTERNSHIP

Student internship has had a long tradition at the University of Belgrade as a very important part of study programs which prepares students for their future work. We do not wish to present all types of student internships organized at the University of Belgrade. We have selected just this one, organized through IAESTE, to show that the roots of higher education reform, established by the Bologna declaration [BD], come from long time ago. This shows that initiatives to carry out higher education reform are not a random process, but are a consequence of great, year-long experience.

For more than 60 years of continuous work of IAESTE Belgrade office, students of technical, technological, natural and mathematical sciences, known by various accomplishments, have realized their internships world-wide in reputable companies, universities and scientific institutions. Let us mention some statistical facts which substantiate these statements:

- 150-200 foreign students a year come to our country for internship
- 200-250 Serbian students a year go abroad for internship.

The distribution of realized internships of students from Serbia by regions is as follows:

- 60% in EU
- 7% in other European countries
- 12% in Asia
- 8% in North America
- 8% in South America
- 5% in Africa.

The IAESTE Belgrade office has a detailed analysis of students' results when it comes to internship realized in Serbia (for foreigners) and abroad (for Serbian students). Here we present only some numerical data. The evaluation of students in exams at Serbian universities goes from 5 (unsatisfactory) to 10 (excellent). In the period 2000-2010 the success of students, who realize their internship through IAESTE Belgrade office, can also be presented by the following data:

- 99% students graduate without delay

- 45% have average grade 9-10
- 50% have average grade 8-9.

An internship lasts from 6 weeks to 18 months.

Of course, there are numerous international organizations which support Serbian students in developing cooperation, internships, etc. The University of Belgrade established the Center for career development and student counseling five years ago. This center helps students to contact employers and find the place of internship, employment, etc. We would like to elaborate on their activities in the next Section.

3. UNIVERSITY CENTER FOR CAREER DEVELOPMENT AND STUDENT CONSELING

The University of Belgrade Center for Career Development and Student Counselling (CCD) was officially founded by the University of Belgrade on December 5, 2006 as a member of the University of Belgrade, in order to create professional university service to support students and recent graduates to develop practical knowledge and skills or continue education upon graduation, and to connect them to the business community.

The major goal of the Center is to create a connection between the employers and recently graduated students and develop the awareness among students about the modern-days requirements. Students need to develop practical skills and increase capabilities in order to be prepared for the rapidly changing labour market. Employers want more than a university degree. The Center assists students to develop skills and knowledge relevant for employment, gain work experience during the studies, learn about the business world and its rules, and think about options in a constructive way in order to be prepared for the next steps after graduation. The Center promotes students and graduates of the University of Belgrade as future experts in different areas of business and promotes the University of Belgrade as the leading higher education institution in the region.

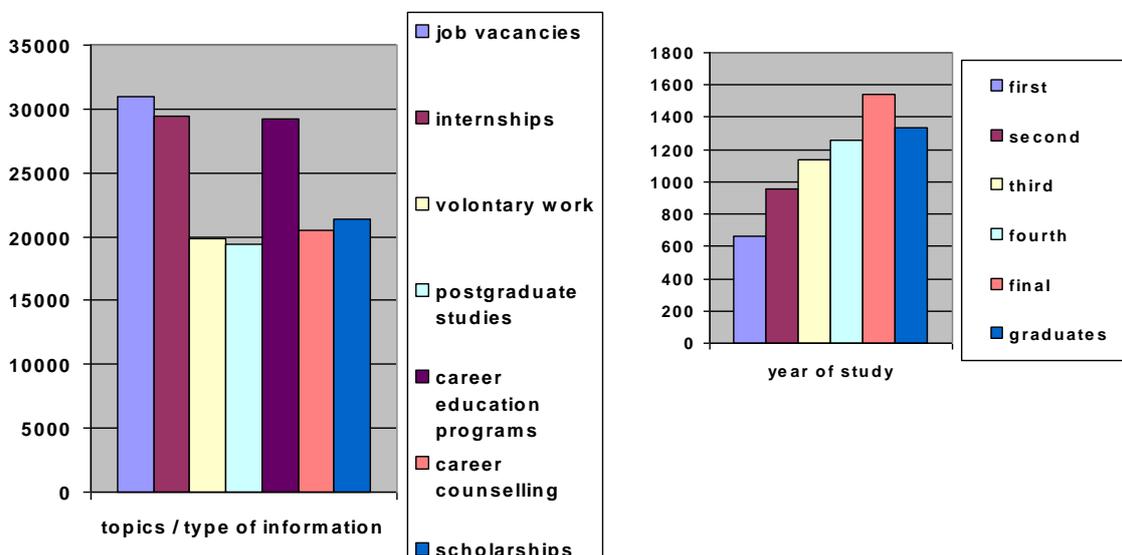
Activities of the Center:

- working on the development of student's capabilities, knowledge and practical skills relevant for employment;
- providing information for students on various opportunities: additional education, scholarships in the country and abroad, vacancies;
- connecting students and employers through internship programs and trainings in the leading companies and organizations in the country;
- organizing presentations of companies and their business ethics and policy;
- providing counseling services for students with dilemmas about their career choice or positioning in the labour market upon graduation;
- other activities of student counseling regarding career development, such as organizing seminars and workshops on job search techniques, writing good CVs and cover letters, preparation for a job interview, etc;
- coordinating work of the existing Career Centers at faculty level;
- Following-up strategic goals in the area of employment in cooperation with the Center for Strategic Management and Planning;
- Cooperating with other University Centers.

CCD provides students with Career Information Services, Career Counseling Services, Career Education Programs and Special programs directed to increasing employability of students and graduates organized in cooperation with employers.

Career Information Services are delivered at the Center in person, but are also made available via website (www.razvojkarijere.bg.ac.rs) and electronically via email and info-mailing lists. Outside the Center, different events and info desks are organized both at the faculties and at the relevant fairs. Due to the growing popularity of social media, different social networks are used, and printed brochures, newsletters and leaflets are distributed at the targeted locations.

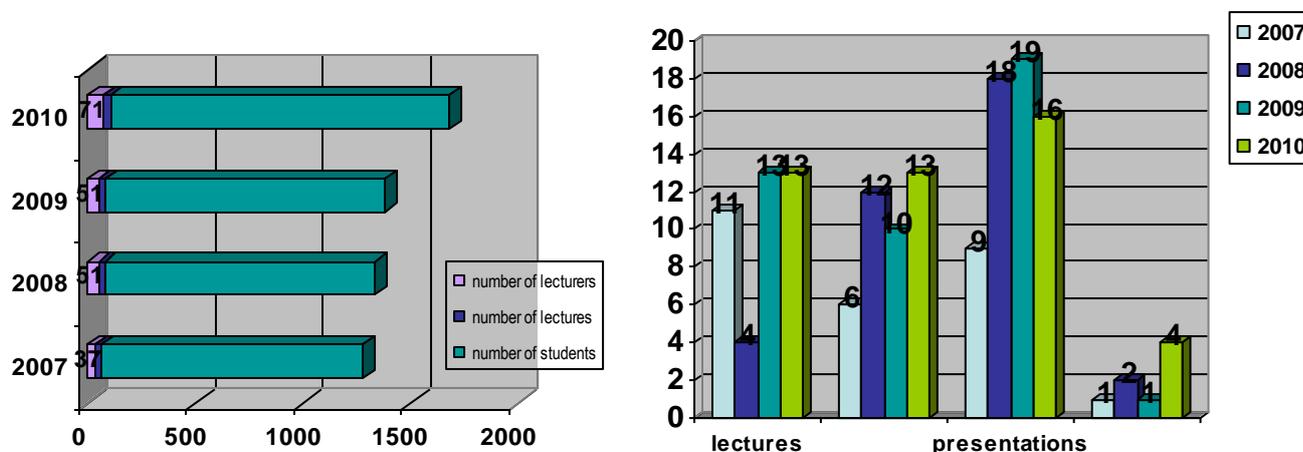
Judging from our experience in work with students, it can be concluded that students' needs for career information, counseling and education grow during the studies and culminate close to the end of studies. The greatest need and interest are related to the information about employment opportunities, internships and additional training and education.



Career Counselling Services for Students are organized in several forms: there are quick queries at the Center, longer scheduled sessions and job interview simulations, e-mail and telephone advice, and “CV Clinic” and Job interview simulations and workshops outside the Center. During the last school year a new program has been launched to bring the career services closer to students by organizing visits to the faculties during which sessions of career counselling are organized parallel with info-desks and suitable educational program. This increased the number of organized counselling sessions in person in relation to those performed via email and phone.

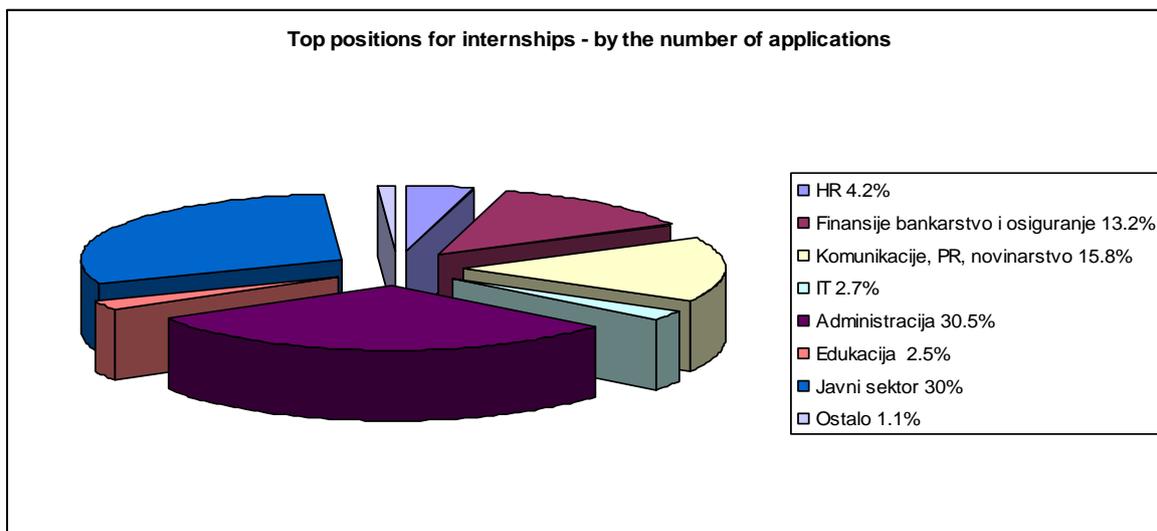
Looking at the number of students who attended various career counselling sessions, one can see that the percentage of those interested in solving dilemmas about ways to improve learning skills, motivation, suitable job and career and advancement of skills for their competitiveness at the labour market is larger than the number of those interested in specific preparations for job, internship or scholarship interview. The fact that students address the Center to assist them with these issues more and more often, shows that they are becoming aware of the importance of gaining additional knowledge and skills for their better employability, and that they recognize the Center as the place where they can get the needed assistance and support.

Career Education Program consists of workshops, lectures and production of other educational content. Besides the workshops and lectures about basic career planning, CV-writing and job hunting skills, the Center organizes workshops and programs for developing skills such as: team work, presentation skills, effective communication, decision making, time management, stress management, project management, problem solving skills, interpersonal skills, motivational skills, networking skills, negotiation skills, etc. Often these training and internship programs are organized in cooperation with university partners from the business sector. The Center also produces various educational materials such as free publications, handbooks and posters for students who visit the Center or events related to career development, and for organizations which work with students and youth in Belgrade. Most of the printed material is also made available on-line at the career library and resource area at the website of the Center.



The number of lectures, lecturers and students attending career education programs of the Center grow as the Center develops and as the concept of career development of university students becomes familiar and recognized within the academic community. Since the start of one of the most popular programs for students – company visits “Meet the business first hand”, the number of career presentations and talks has risen, and companies have been more and more interested to meet the students this way and talk with them about their careers and career opportunities in their companies.

CCD collaborates with employers and offers a range of services for faster and easier way to find appropriate candidates for available job positions, internships and fellowships, and to promote company’s professional values, especially youth employment policy. Looking at the structure of the employers in the CCD base by sectors, we can see that the public sector has the largest share. Education and culture sector follow, and service sector takes the third place. Other sectors are also covered, with particular attention to Engineering, Technology and Finance and banking sector, out of which the latter is the top sector in which most students would like to get employment. Students’ interest in internship programs is also in growth, since most of the employers are looking for the candidates with certain work experience. In the last two years, the number of job vacancies advertised through the CCD has decreased, whereas the number of internship positions has been on the increase. In the last two years the largest number of applicants for internship programs was in the sector of administration and public sector.



In cooperation with employers, CCD also develops various programs designed to improve skills for better employability of students and graduates of the University of Belgrade. Some of the most important ones are: “Meet the Business First Hand - Saznajte iz prve ruke” – students’ visits to companies, “Kadar da budem kadar” – trainings for students in soft skills, “Career Chat” – career information and counselling “Karijerno Ćaskanje” and INTERNSHIPS, INTERNSHIPS, INTERNSHIPS – designing and organizing internship programs in cooperation with organizations and companies.

These programs are realized on the bases of strategic cooperation agreements made between the University of Belgrade and some of the key players at the labour market (both on the local and national level).

In the last two years, one of the best examples of cooperation in organizing internship programs is “Univerzitetska radna praksa” BGPRAKSA2010, BGPRAKSA2011, which was organized in 20 public enterprises of the City of Belgrade and 12 units of local government for 140 students in 2010, and for 200 students in 2011. Another Public enterprise ELEKTROMREZA SRBIJE organizes internships and fellowships for students of electrical engineering through jointly developed career development program. 25 interns completed program in 2009 and 2010, and the call for 2011 is currently open.

The Center of Career Development of the University of Belgrade carried out a pilot research “First Destination Data” /Gde ste, sta radite/ in the period from December 2009 to March 2010, with the aim of providing, among other information, data regarding the employability of graduates of the University of Belgrade. The fact that this is a pilot project (online type, size and structure of the sample) does not allow us to generalize this information, yet it gives us some insight about what happens with our students after graduating. Out of all examined graduates that actively searched for job, 60% had the opportunity to work in the first six months after graduation. 25.1% jobs were received in the first 3 months. Graduates that got job fastest were from the Faculty of Natural Sciences and Mathematics, Faculty of Electrical Engineering and Faculty of Economics.

Throughout active participation in domestic and international projects, we take steps to improve the employability of students and to keep up with the concept of lifelong learning and lifelong guidance.

However, aware of the importance of measuring and increasing the employability of students, the University of Belgrade (Center for Career Development) has established partnerships with numerous European universities on the project "**Conducting Graduate Surveys for Enhanced Strategic Management and Quality Improvement (CONGRAD)**", together with the Education, Audiovisual and Culture Executive Agency, with the following aims:

1. Development of data collection system about graduates at Serbian higher education institutions (development of the alumni data basis, analysis units etc.),
2. Strengthening capacities of higher education institutions in Serbia to conduct graduate tracer surveys and use them for strategic management decisions and
3. Organization and analysis of initial graduate survey in Serbia, Montenegro and Bosnia and Herzegovina.

The implementation of this 3-year international project is expected to begin in the 2011/12 academic year.

The second international project which will be implemented in the next three years is CareerS /Tempus project - Development of Career Guidance Aimed at Improving Higher Education in Serbia/. Project CareerS is focused on the development of career guidance in higher education as an integral part of developing the system of career guidance in Serbia. One of objectives of project is: Developing the Program of Career Information, Guidance and Education, aiming to increase youth employability. We expect that students will benefit most from the project, since it aims to enable students to manage and plan their learning and work pathways in accordance with their career goals, relating their competences and interests to education, training and labor market opportunities. Those who will also avail of this project are public universities in Serbia, academic staff, employers and policy makers.

We have faced many challenges already, but there are also plenty of them that we will face in future. There is no doubt that well organized and functioning career centers can play an important role in helping governments to improve labor supply, address skills shortages and emerging competence areas, and improve the quality of human capital. We refer to [CC] for more details. Also, effective career centers can be described as an indicator of well-functioning higher education system. In addition, the Ministry of Education and Science recognizes that in Serbia it is necessary to work on improving student services and the employability of students.

4. BUSINESS-TECHNOLOGY INCUBATOR OF TECHNICAL FACULTIES BELGRADE

So far we have analyzed various skills important for graduates in rapidly changing market. Anyhow, entrepreneurship is one of competencies whichh need a special approach. This

is precisely one of the main reasons that the BusinessTechnology Incubator of Technical Faculties Belgrade Ltd. (BITF) has been established by the four technical faculties of the University of Belgrade (Civil Engineering, Mechanical, Electrical and Technology and Metallurgy), the Municipality of Palilula and the Democratic Transition Initiative, with support of the Organization for Security and Cooperation, based on the experience of developed countries and best practices. The objectives of establishing BITF:

- to support the creation of young, technically educated people to initiate and develop their own business, and so earn their economic livelihood and keep them stay in the country;
- creating the conditions for direct commercialization of results of scientific research work of professors and associate faculty through the establishment of new businesses;
- creation of new SMEs in the high tech industry.

These objectives are the essence of where the BITF and college founders strive. At the end of 20th century Serbia has recognized the need to develop the SME sector. On the macro level many significant advances have been made in this field, from the establishment of national and regional agencies for SMEs, to the adoption of strategies and development plans to improve business conditions, especially in the sphere of business registration. From the point of view of non-formal education, the first improvements have been made by the agencies for SMEs by designing and conducting a series of trainings.

However, technical faculties in Belgrade remained outside this process. On four of technical faculties (Civil Engineering, Mechanical, Electrical and Technology and Metallurgy), an average of 900 students graduate per year. Throughout their regular education, these students master technological skills in electrical, mechanical and civil engineering, process technology, but they have no knowledge on entrepreneurship, management, business planning and marketing.

Since previously nobody worked with young people at technical faculties in the educational process of entrepreneurship, and development of innovation and commercialization are not sufficiently supported by us, the incubator activities are profiled in two phases:

Pre-incubation phase Preparing young people, senior students and graduates of technical faculties, to start their own businesses, through education and training programs, and through ongoing consulting and mentoring program.

The development of innovation through the final stages of research processes in the development and commercialization of new products, services, technologies and prototypes in the process of transferring knowledge and technology from faculties.

Incubation phase Assisting small businesses with innovative start-ups – tenants of the Business and Technology Incubator in the early stages of development to overcome the difficulties and providing incubator services (such as economic, legal and accounting) and ongoing training, consulting and mentoring to develop their business successfully.



In order to encourage young people (students and graduates of technical faculties) to start their own businesses within pre-incubation activities, the focus is on developing their knowledge and skills in entrepreneurship and business. BITF has developed a series of interactive education and training: the basic training on the topic *How to start your own business*, and specialized trainings in intellectual property protection, marketing, management and sales. Trainings in the first year were available only to students of technical faculties, but because of the large interest of young people from other faculties, and thanks to the support of City of Belgrade, the program has been expanded and is available to young people from all the faculties of the University of Belgrade. So far, 53 training sessions were held which were attended by more than 500 students at the University of Belgrade (some of them have attended five or more trainings) so that the number of participants in this training exceeded 1000! (see Table 1.).

Name of training	Number of trainings	Number of participants
How to start your own business	13	288
Sales	7	106
Management	9	152
Marketing	9	142
Team work and conflict resolution	5	115
Business communication	5	116
Intellectual property protection	5	97
<i>Total</i>	<i>53</i>	<i>1016</i>

Table 1. Summary of implemented trainings

After attending the training, during pre-incubation phase, students and young graduates have consulting services at their disposal in the area of idea development through the business plan, along with the protection of intellectual property, legal services and the company registration process. All services of the Incubator are provided to the young people in pre-incubation phase free of charge, and they are organized by the Incubator within the various projects financed by national and international institutions. After registering a start-up or spin-off company, young people have access to the following services:

- office space with infrastructure;
- administrative, accounting and legal services;

- development of additional knowledge and skills through additional training and ongoing consulting in the field of business planning, intellectual property protection and development of innovation;
- fund raising services to develop innovations.

The structure of total costs of the incubator, where over 70% of costs are the costs of services in the incubation and pre-incubation phase shows how developed and comprehensive these services are.

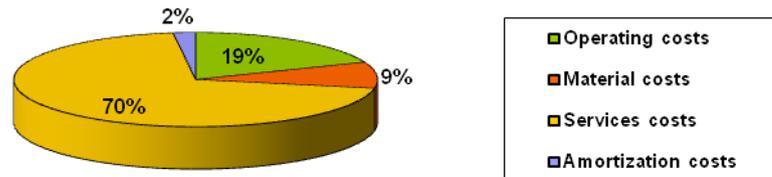
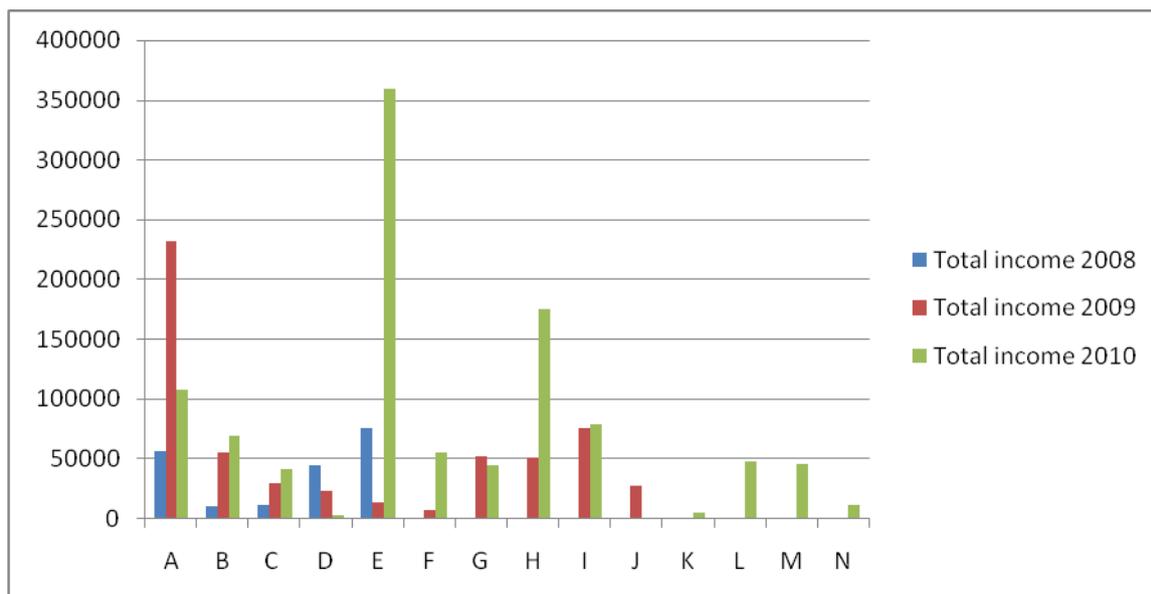


Diagram 2. Structure of Incubator costs

Due to the lack of funds, the office space of the Incubator was renovated in phases: the first group of start-up companies moved into the Incubator in December 2007, the second in early 2009, and the third in 2010. At the end of 2010 the first incubation cycle of 3 years expired (companies marked on a diagram from A to E).

Despite the global economic crisis, the growth of these companies could be detected from the analysis of financial data related to business operations of the companies within the Incubator (see Diagram 2).



Diagrams 3. Start up company income (BITF tenants) in EUR

An important fact is that one-fifth of start-up companies in the Incubator are export business as of the first day of their operations. The growth in employment is another important indicator – there are 65 employed young people with high education and almost 40 who are additionally engaged in part time jobs. There is also an invaluable fact that, among those young people, there are 10 engineers who returned from abroad, six of which founded their own small companies.

Among the tenants of the Incubator, there are a number of spin-off companies that developed directly from the process of knowledge and technology transfer from universities (TeleSkin, BioEko, Pirograms, Aqua Cristal, InterCer). The founders of these companies emphasize that they would not be able to run the company if:

- there was no Business Incubator with developed services, and
- there was no opportunity (also through the incubator PT) to complete their innovation and bring it to commercialization through the innovation projects.

The most telling example on the importance of these companies is that of TeleSkin, which in only two years, from the methodology for scanning skin melanoma (previously developed in the research process), developed the complex device (software and hardware) which is now in certification phase and getting all the necessary permits and plans to start production this September. At the end of May 2010, TeleSkin represented Serbia, by the choice of European Commission, in the European Entrepreneurship Week and was presented as one of the 35 success stories in the EU!



Photo 4. TeleSkin Ltd.

Another successful example is Strawberry Energy. It is the team of students of the University of Belgrade to whom BITF provides full support from the beginning of their work. Their example shows the importance of knowledge and skill development, which takes place in the non-formal education process of the Incubator. These young people have developed a public solar charger for mobile phones and won the first prize in the competition for the European award in Brussels for renewable energy in the category of renewable energy consumption, in the competition of 309 projects. In the meantime, they founded a small business, and with the incubator support they began to commercialize their innovations.



Photo 5. Strawberry Energy

Thanks to this comprehensive program, in the first three years of its work, BITF has achieved significant results:

- 600 m² of renovated business space,
- 500 students have passed the trainings on entrepreneurship,
- 100 young people engaged in the incubator and enterprises-tenants,
- 21 small enterprises tenants of the incubator,
- 14 new technologies/services developed in innovation projects,
- 5 clusters/networks established,
- 1 service center developed.

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