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Letter to Editor

STRATEGY OF REDUCING EXPENSES BY INTRODUCING E-LEARNING IN UNIVERSITY-LEVEL EDUCATION INSTITUTIONS

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Abstract

In today's modern business dealings, companies and managers face different business ventures and an array of challenges when solving various tasks. That is why it is necessary to ensure the resources neeeded to accomplish all this. If the required components are not ensured and invested, there will be neither reproduction process nor will the company achieve the desired results. An expense is one form of investing material and human components in the process of work and company's business. The main business components – means of labour, objects of labour and workforce – are introduced into the organisation and the organisation's technological process as appropriate use values. Spending these components is a precondition for creating new products and services. To offer its services to the consumers, the students, each university-level education institution has to be provided with definite means of work and qualified staff. However, the business operations involve some expenses which each institution intends to reduce to its minimum. The expenses in such institutions are possible to reduce by introducing the platform of e-learning. The Paper shows the project of introducing e-learning into one higher education institution in Serbia, as well as reduced expenses as a result of it.

Keywords: higher education sistem, costs, project, e-learning

1. INTRODUCTION

If a project is to be called a project, it has to include a large scope of activities and tasks. There are four main characteristics of projects and these are the following (Jovanovic, 2004):

1. preview
2. uniqueness
3. complexity
4. support

A project is a special venture that cannot

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be repeated and has a fixed beginning and end. The general approach when considering the term 'project' is found in the following definition: „A project is a complex, unique business venture that is to be undertaken in the future with the aim of accomplishing the goal within the predicted period of time and with anticipated expenses" (Jovanovic, 2004). Based on the definition and characteristics of the Project, it can be shown graphically. The schematic illustration of the project is shown in figure 1.

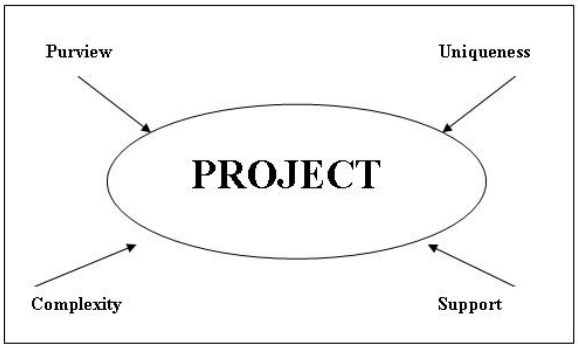

Figure 1. Schematic illustration of the project

In recent years, the topic of distance larning with an emphasis on the possibility that students can learn better with less effort has become increasingly popular. Distance learning is an education program (course, certificate, degree, or other) that allows students to complete all or most of the program from a remote location (his or her living room, for example), while receiving the same credit as a student that completes the program onsite (Sengel, 2005; Markovic and Spariosu 2010).

Personal computers are being used increasingly in distance education, and they have the potential to change radically the nature of education. For the student learning at a distance or using self-instructional material, computers can be powerful study tools, whether providing general "clerical" support, e.g. word processing facilities, spreadsheets, databases, or contributing to the subject area, e.g. via simulations in Physics, calculation and statistical packages in Mathematics, programming environments in Computer Science (Federico, 2000).

E-learning requires certain skills in using computers. Lack of computer skills of students affected their abilities to communicate effectively with the instructor and failed to participate in a variety of online communication methods (Abdelaziz et al., 2011).

E-learning contributes to reducing the costs of studying. The platform which makes possible this kind of studies presupposes that students would not have to come to the classes often, which would reduce transportation costs, which would eventually reduce the total costs of education. This would open a possibility for those living far away from college to start studying and attend school with less effort. Besides the mentioned cost reduction and better services the education system would provide, the innovated way of education would also increase business profit. The paper describes one of the possibilities investing in e-learning offers, how much certain resources can be saved thanks to this process as well as the return on investment calculation.

2. THE MAIN CHARACTERISTICS OF E-LEARNING

In the context of management and organization studies, the potential of action research for generating robust actionable knowledge has not been yet realized (Coghlan, 2011; Velimirovic et al., 2011).

The key element of successful distance learning is the communication between

teachers and students (Dimitrijevic, 2009). The essential role if this teacher-student relation is to be successful belongs to the medium. If the minimum communication is to be accomplished, the relation between the three elements - sender, recipient and message – has to function properly. If the message stands for a kind of instruction, then apart from the student, teacher and contents, what also has to be taken into account is the environment in which this process is taking place.

Along with technological developments, distance learning has developed with regard to the use of educational material. At first, printed material was used; later, technological achievements have allowed the introduction of the new 'instructional' media such as pictures, slides, films. Electronic media have played an essential role here – the radio, television, and later interactive computer technologies and dynamic Web sites. The whole system of this new form of education has its historical development which started in the first half of the 19thC and is characteristic of a very complex nature up to the present day. It was put in motion by an Englishman called Isaac Pitman in 1840. Since then, these new forms of communication have constantly been developing as numerous examples prove: Anna Picknor and education of women at home, colleges in New York and the Pennsylvania State University, BBC, the NET, cable TV and finally Flying Classrooms and the development of the LMS (Learning Management System) (http://www.pil-vb.net/). Modern technology has allowed teaching material to be read directly from the server of the educational institution (figure 2). The contents of the material are displayed at the user's computer for which purpose one of the search engines is used (Explorer, Netscape, Firefox, etc). The educational institution has to have the Internet connection (be online) so that its Websites can be accessed. Tests are done in the same way. What is used is the interactive approach, i.e., dynamic sites, whereby the user gets one question at a time which he or

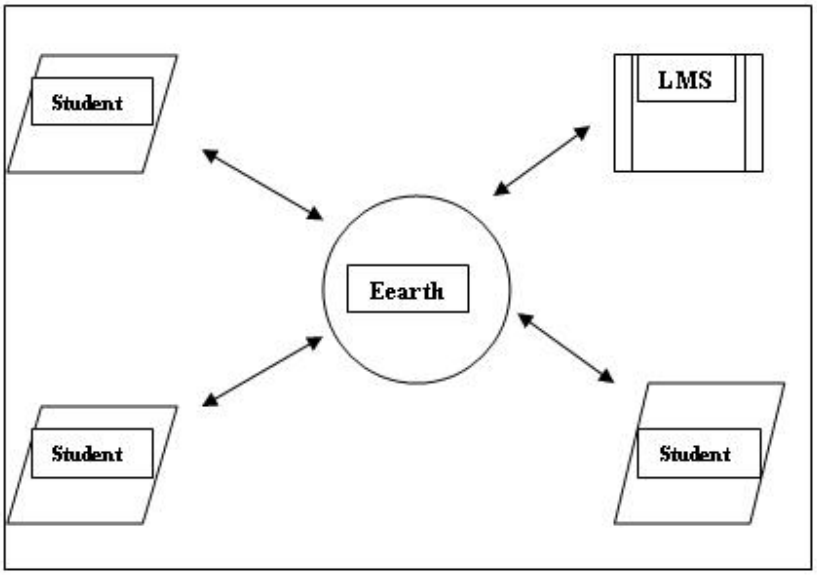

Figure 2. Global Studying (http://www.pil-vb.net/)

she has to answer within a fixed period of time.

The e-learning system integrates multimedia lectures and interactive drill sessions, which makes the communication with professors, assistants and colleagues easier as they all use e-mail, forums or messengers.

The development of technology had lead to the development of the LMS (Learning Management System), the system which, as its name suggests, manages the process of learning. These systems make it possible for the teacher to monitor how each student develops and progresses and these observations are then entered into databases. However, time had shown that the LMS had to be upgraded, which was done thanks to the achievements made in Information Technologies.

Students who study "from home" have the same rights and duties as those who physically attend the classes; the only difference is that they do not have to attend the classes in the regular way and take pre-exam tests (seminars or colloquiums) before taking an exam. They only have to take their exams at the university headquarters building. Electronic learning would be an attractive form of education for all those who are interested in studying but who cannot come to school physically for various reasons.

For the new generations of children, pupils and students now entering primary and secondary schools or universities, computers are an everyday thing; therefore, it is quite natural to expect that the present form of education is bound to change in the future. This would largely improve the services provided by the educational institutions and lower the costs these institutions currently have.

3. THE IMPORTANCE OF ELECTRONIC LEARNING

The economy of transition countries very often undergoes deep-rooted changes. Resistance to change is a frequently theme in practice and can often appear counter-productive (Watson, 2011). The transformation of ownership structure, the influx of foreign capital, bank transformation, new production programs, the application of new technologies, the introduction of quality systems – these are just a few of the measures that have to be conducted. It frequently happens that these measures fail to be carried out as there is no high quality staff to do so. Many companies would find their interest in electronic learning as their employees could undergo retraining or special courses organised by higher education institutions. The accepted concepts of adult education and lifelong learning are yet another elements that support the need for introducing some form of modern learning. The staff at higher education institutions need a MSc degree to be qualified for this form of teaching. Hiring a lecturer with a PhD degree or any other high quality lecturer, even from abroad, is just one of the possibilities electronic elarning can offer (www.scribd.com/).

All the above mentioned things may lead to the conclusion that there are many reasons for justifying the introduction of modern ways of learning into higher education institutions. Since this guideline has a strategic character, it is necessary to research all the relevant indicators in higher education institutions if distance learning is going to be introduced into these institutions in practice. The results which would be the outcome of such research could be used to create an adequate distance learning model. The sole

reason for the application of the new education method should primarily come as the result of the need to improve the quality of classes and the quality of knowledge students acquire. Of course, another goal is to equip graduate students as best as possible for their entry into the job market. Electronic learning is not just important for students; many things speak in favour of its importance for the education of the already employed people. Today's managers find themeselves stretched between two divergent forces: on one hand, there are constant requests for education, and on the other, the employees are absent from workplace due to the training courses they attend. The additional costs made because of the employees' absence from work are very often so high that managers avoid sending their subordinates to these courses. This is how great potentials get lost as companies do not have high quality workforce ready and willing to take part in the competitive battle.

The same goes for the education of future teachers and other staff employed in education especially when it comes to the use of modern teaching techniques which aim is knowledge transfer to pupils and students. Young people who have completed their secondary education, workers and other interested parties find themeselves in a similar position. Faced with merciless competitive struggle in the job market these social categories are forced to continue learning and undergo retraining.Therefore, they are willing to invest in new knowledge. This new knowledge always pays off at the end in many ways, and e-learning is primarily such kind of knowledge. There are many reasons why electronic learning should be introduced into educational institutions, and all of them could be categorized as follows:

1. E-learning allows students to choose the place, the time and the duration of learning sessions, 24 hours a day.

2. E- learning allows access to distance users.

3. E- learning makes the retraining of the employees easier as it provides a favourable time and price framework.

In a relatively short period of time, information technology has changed the way of both learning and teaching. Computers and software are rapidly developing and the price of Internet services is decreasing.

Electronic learning saves time and money and offers a possibility of the dispersion of knowledge within seconds in what is practically unlimited space (distant places, other countries, other continents). Figure 3 shows the Internet dominance in technologically based education in the period from 1997-2003. (www.scribd.com/).

The use of intellectual capital indicators for external reporting purposes is also based on the principles of information technology. External reporting gives organizations a more detailed insight into the efforts which should lead to a long-term and successful business and coordination among the employees. Therefore, it could be concluded that the knowledge sharing approach should be embedded into everyday work processes by help of IT (Figure 4 – Digital Nervous System) which would change both the culture and the style of the organization (Gates, 2001).

Technologies are cognitive tools which help learners to elaborate on what they are thinking and to engage in meaningful learning (Jonassen, 2000). In addition, Jonassen (2000) summarized that learners use technologies as intellectual partners in order to:

1. Articulate what they know;

2. Reflect on what they have learned;

3. Support the internal negotiation of meaning making;

4. Construct personal representations of meaning; and

5. Support intentional, mindful thinking (p.334).

Many commonly used technologies can provide support for online learning such as the Web, online discussion groups, online resources, and online courseware (Yang, 2000). The World Wide Web (Web) provides hypertext links and hypermedia ability to facilitate educational instruction. Hypermedia and Web publishing are knowledge construction environments which

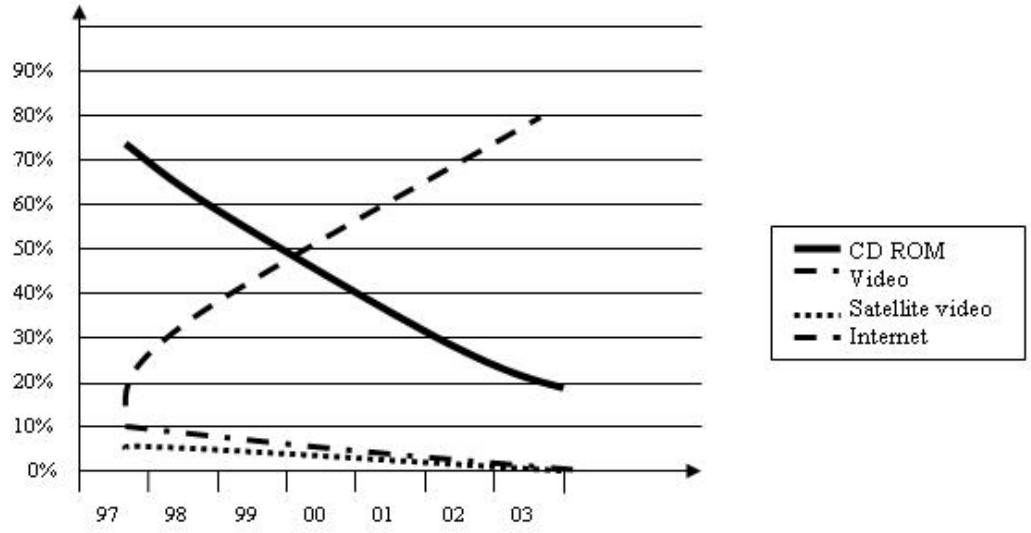

Figure 3. Internet dominance in technologically based education (www.scribd.com/)

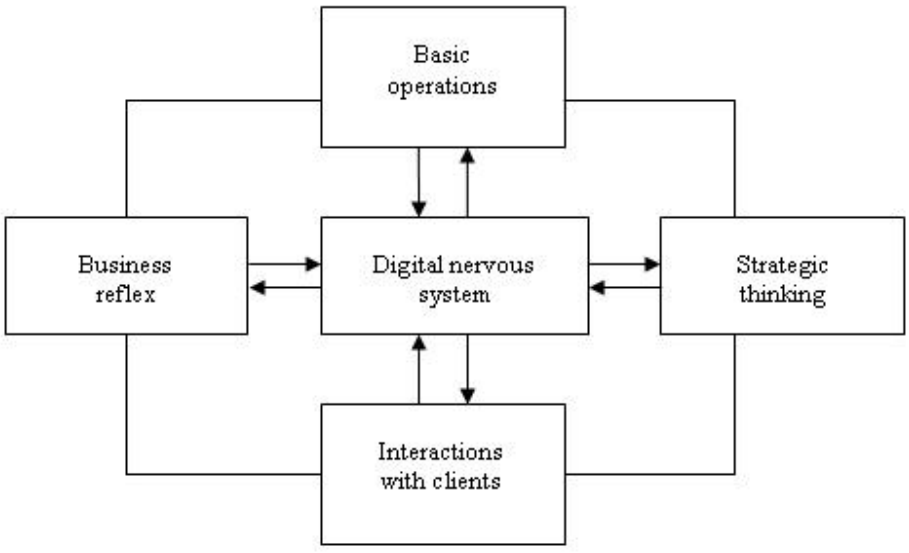

Figure 4. Digital Nervous System (Gejts,2001)

often incorporate information search engines for better understanding of information and video for visualizing the range of ideas that students generate (Jonassen, 2000).

4. BUSINESS EXPENSES OF A HIGHER EDUCATION INSTITUTION AND POSSIBILITIES FOR THEIR REDUCTION

An expense is one form of investing material and human components in the process of work and company's business. If the required components are not ensured and invested, there will be neither reproduction process nor will the company achieve its results. The main business components – means of labour, objects of labour and workforce – are introduced into the organisation and the organisation's technological process as appropriate use values. Spending these components is a precondition for creating new products and services.(Perovic, Ilic, 2010) Expenses represent the value of spent production elements in the reproduction process. Since the price reflects the value, we can say that expenses, which are reflected in the money spent, represent the quantity of the workforce, objects of labour and means of labour spent in the process. Monitoring the expenses is an important element of the whole process of the project realization. Its main goal is to ensure that whatever is spent follows the dynamics and amounts according to the pre-established plan. Within one organizational structure, the process of cost monitoring and control should be organized as a separate system with the main task of supervising and gathering data referring to the resources really spent and those planned to be spent. (Jovanovic, Jovanovic, 2010) Planning saves time and makes it possible for various company's resources to be used in the best possible way. (Jovanovic, 2005).

Therefore, costs encompass the following:

1. Workforce costs;
2. Costs of objects of labour;
3. Costs of means of labour.

All the costs could be broken into different categories depending on the criteria used but the most common ones are the following:

- Considering how costs are distributed and who has to pay for them, there are:
  1. direct, and
  2. indirect costs
- Considering the relation between the costs and the degree of capacity use, there are:
  1. fixed and
  2. variable costs.

Table 1 shows some of the expenses a higher education institution can have (this is an assumption). The paper then deals with the calculations regarding resource saving, costs of introducing the electronic platform and e-learning as well as return on investment and profit increase.

The principle of accomplishing maximum results at minimum costs is embedded in every economic entity, including companies (Jovanovic, 2005). If the e-learning platform together with all the required equipment could be installed and this process put in motion, it would be possible to calculate how certain business costs of higher education institutions could be reduced, as well as return on certain funds and the amount of money left for salaries after the investment payoff.

E-learning would lower costs of transportation of professors, which would

Table 1. Overview of some expenses of higher education institutions

Offices materials costs	20000
Production services	60000
Costs of capital maintenance	40000
Costs of postal services	5000
Costs of newspaper ads	3000
Costs of ads on the radio	9000
Costs of brochures and posters	10000
Costs of production services	4000
Costs of utilities	2000
Seminars and symposia	9000
Cleaning and maintenance	3000
Costs of catering services	10000
Insurance costs	3000
Bank charges	700
Charges for water use	1000
Staff expenses	200000
Gross Taxes and Contributions	40000
Gross costs of fees	50000
Accrued expenses of travel accounts	60000

automatically reduce the costs of travel accounts. However, this would not be the only saving. We should not forget that every higher education institution has to offer its students textbooks and other learning material; this is yet another expense and it is paid for publishing activities.

The publishing expense can be calculated by using the following equation (1):

$$Tp = Tk \bullet n \quad (1)$$

where:

Tp – publishing expense,

Tk – publishing expense for one textbook (for one subject), and

n – number of subject per year.

If we assume that publishing one textbook (Tk) costs approximately 400 €, and if this number is multiplied by, let's say 7, which is the number of subjects per schoolyear, we will get 2800 € – this is the amount paid for publishing costs - Tp. Based on the equation (1), it is obtained the following:

$$Tp = Tk \bullet 7$$
$$Tp = 400 \bullet 7$$
$$Tp = 2800 €$$

The publishing expenses for four years amount as foillows:

$$Tp = 4 \bullet 2800$$
$$Tp = 11\ 200 €$$

Besides the schedule of classes, the e-learning platform would enable students to use textbooks in the electronic form. This would increase the efficiency of services provided by the institution, or in other words, education as a whole would be more efficient. And finally, since the textbooks would be practically free, the tuition could be raised.

Talking about textbooks, the fact is that students tend to buy less, or do not buy textbooks at all as their copies cost much less. The profit gained from the raised tuition could be used to stimulate professors, for example, they could be paid additionally for making electronic copies of their textbooks and putting them on the platform.

5. COSTS OF ELECTRONIC LEARNING

Table 1 shows that costs of postal services are 5000 €. This amount includes the price of the Internet connection. The electronic platform uses a Web server, and if a web hosting service is to be used, the costs of leasing would be 200 € per month. This sum

of money includes the price of putting the website on the Internet, which is 120 €, and the price of leasing (hosting) the site which is the remaining 80 €. So, the costs per year would be the following:

Tw = 12 • 200 €
Tw = 2400 €

Besides the above mentioned costs, there is yet another category of costs and this one regards teachers as putting multimedia contents on the platfrom requires extra time spent by every teacher, that is, an extra payment for them. Those expenses can be calculated on the basis of the equation (2):

$$Tpr = c \bullet n_c \quad (2)$$

where:
Tpr – total expenses of placing multimedia contents on the platform,
c – expenses of placing multimedia platform contents per teaching hour, and
n_c – number of teching hours per year.

If we take that the amount of 10 € is to be paid for every class (this sum is doubled in comparison to 5 € which is paid for regular classes), then the amount of money for one subject (it is necessary to have, let's say, 30 classes per term, that is, 60 per year). Based on the equation (2), it is obtained as follows:

Tpr = 10 • 60
Tpr/year = 600 €

The total costs of teachers' salaries(Tz) for seven subjects per year would be the following:

Tz /year = 7 • 600 €
Tz/year = 4200 €

The costs of salaries per subject for four school years (Tsz) would be the following:

Tsz = 4200 • 4
Tsz = 16800 €

The investment of equipment necessary for the introduction and proper functioning of e-learning are approximately given in Table 2 and they amount to 22400 €. So, the investments of e-learning would be:

The described variant of e-learning is somewhat cheaper because the Web server is leased (the institution does not have its own Web server). Maintaing the site (or more sites) would be free if the institution employs its own system administrator.

Table 2. Investments

Investments	**Price (€)**
Equipment	22.400
Lease mail server	960 (80*12 months)
Costs of professors' salaries	16.800 (4200*4years)
Setting site	1.440 (120*12 months)
Total investments	**Σ 41.600 €**

6. CRITERIA FOR REPAYMENT TERMS OF INVESTMENTS

Repayment terms refer ro the amount of time within which the net cash inflow (effect) made due to investment exploitation will pay off the funds invested in its realization. From the point of view of an investor, it is desireable that this period is as short as possible. Repayment term is calculated in years (http://www.forum.ftn.uns.ac.rs/) and can be calculated on the base of the equation (3):

$$t = I / NC \text{ (years)} \quad (3)$$

where:
t – repayment terms in years,
I – total invested funds,
NC – net cash (annual) inflow produced by the investment.

The annual net cash inflow (net effect) is gained after multiplying the number of enlisted students at the first year of studies by the difference in the amount of money between the old and the new (raised) tuition. In this case, let's say there are 300 enlisted students, and if the tuition is raised (thanks to the savings of e-learning) by 50 € per student, the net cash inflow for only one year will be as follows:

$$NC = 300 \cdot 50$$
$$NC = 15000 €$$

Return of investment can be calculated on the base of obtained results by using the equation (3):

$$t = I / NC$$
$$t = 40000 / 15000$$
$$t = 2.7 \text{ years}$$

The shorter period of return on investment reduces the risk from changes that may occur in the economic conditions. The equipment life cycle has to be longer than the payback period. In our case, the average equipment life cycle is five years; after this period, it is necessary to invest in the existing technology and equipment.

Table 3 shows that invested funds are returned in the third year. The table also shows the annual net cash inflow:

Repayment terms of investments can also be graphically shown (Figure 5). Both the analytical and graphical results have to be identical, which is seen in the following graph:

Table 3. Cash – flow (€)

Year	Cash – flow	Cumulative
0 – inv. per.	- 41.600	- 41.600
1.	15.000	- 26.600
2.	15.000	- 11.600
3.	15.000	+ 3.400

The criterium used for repayment terms of investments is a simple and popular one. The reason for this lies in its easy application, and

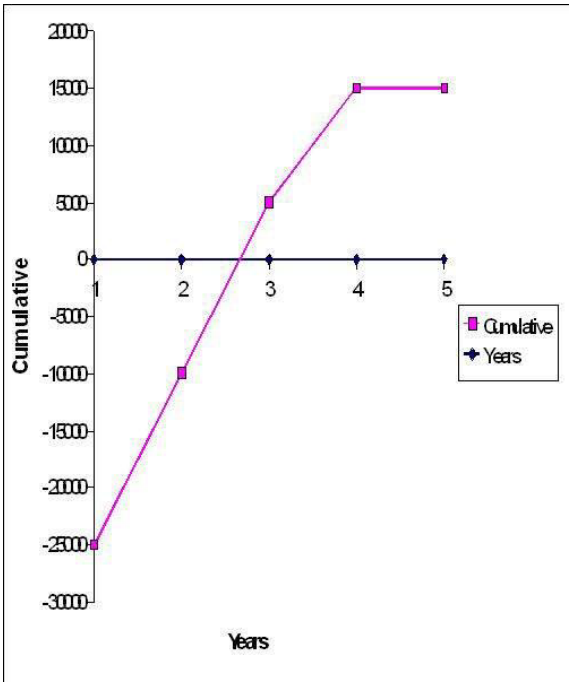

Figure 5. Repayment terms of investments

investors want to reduce any risks that their funds could be captured for longer periods in the uncertian future. The criterion used for repayment terms of investments is a simple and popular one. The reason for this lies in its easy application, and investors want to reduce any risks that their funds could be captured for longer periods in the uncertian future. The criterion is usually applied in the

initial analyses when possible sollutions are looked for, but it may serve as the main criterion for making investment decisions especially in the following cases:

1. 1. If the main reson in deciding on the company's investment policy is lack of investment funds; in such cases investors want their funds to be returned as soon as possible;
2. If the rate of technical–technological innovation is very fast; in such cases there is a high risk of technical or technological obsolescence.

As far as the technologies used in e-learning are concerned, both of the above mentioned cases can be true. If a higher education institution with limited resources is in question (either budget financed or self financing), it is of crucial importance that invested funds are returned as soon as it is possible. If we add to this the fast advance and development of computers and technology, a high risk of technical obsolescence must also be considered. The faster the return on invested capital, the greater the possibilities for investing in newer and more modern equipment.

Since e-learning is characteristic of a relatively high rate of return, it may be concluded that it would contribute not only to the business cost reduction but to a high enough return on investment, that is, profit.

7. RETURN ON INVESTMENT (ROI)

The ROI criterion is a kind of improvement of the previous criterion as it takes into account the whole duration of the project. This approach - return on investment, known as ROI - was at the core of the control system of 'Du Pont Company' in 1919. Since then it has been used by many companies as the key indicator that a project is fully realized and implemented. The ROI indicator represents the rate of return that a company or economic entity can earn. One conceptual definition is that ROI is a project's net output (cost savings and/or new revenue that results from a project less the total project costs), divided by the project's total inputs (total costs), and expressed as a percentage (Jeffery, 2004). Management and marketing literature defines 'Return on Investment' (ROI) as an outcome performance measure of financial effectiveness that is concerned with returns on capital employed in business (profit-making) activities (Watson, 2011).

There are many factors one should consider when making an investment decision. These factors include, but are not limited to those listed below:

The assumptions underlying the costs of the project.

The assumptions underlying the potential benefits.

An interesting observation (Jeffery, 2004) is that only 25% of companies responding to the survey actually measured the realized ROI after a project was complete. ROI analysis is therefore primarily used to justify an investment decision before the investment is made. Performing post-project analysis provides valuable feedback to the investment decision process to verify the validity of the original ROI analysis, and the feedback improves ROI calculations in the future. Feedback also enables the weeding out of underperforming projects. Full life-cycle ROI analysis translates into better information to make better decisions, which in turn should impact the returns for the total corporate IT portfolio of investments (Jeffery, 2004).

One of the most important ROI

advantages is directing managers at the main business objective, and that is making as much profit as possible using the capital they have at their disposal. This criterion measures the company's efficiency as a whole, as well as the efficiency of the company's main departments, products and plans. Also, the ROI indicator diverts attention from typical increases in sales volume or deployed means, or even costs, and in that way calls attention to the combination of various factors which increase and encourage business success (http://www.forum.ftn.uns.ac.rs/).

Return on investment is calculated in percent by using the equation (4) and (5):

Average annual profit (AAP) =

$$\frac{(\text{overall revenues}) - (\text{overall expenditures})}{\text{Project duration (years)}} \quad (4)$$

Return of investment (ROI) =

$$\frac{\text{average annual profit}}{\text{investment amount}} \cdot 100 \ (\%) \quad (5)$$

If we take that the period, i.e., project duration is five years, then the overall revenues (OR) (if all parametres are not changed) will be:

OR = 15000 € • 5 years
OR = 75000 €

Since the overall expenditures (in Table 2. Total investments) are already known and they amount to 41600 €, by using the equation (4), it can be calculated medium yearly profit:

$$\text{AAP} = \frac{75000 - 41600}{5}$$

$$\text{AAP} = \frac{33400}{5} = 6680\,€$$

By replacing obtained values for medium yearly profit in the equation (5), it is obtained the return of investment (ROI):

$$\text{ROI} = \frac{6680}{41600} \cdot 100$$

$$\text{ROI} = 16.05\ \%$$

This indicator is especially important when ranking a project, whereby the project with the bigger ROI is ranked better.

8. USING COMPUTER TECHNOLOGIES IN THE EDUCATION SYSTEM IN SERBIA

There is no doubt that the introduction of e-learning would lead to certain organisational changes. This means that the very success of its realization and implementation largely depends on the organisational structure. The whole teaching staff should be trained for giving lectures and classes in a new way. An extenuating circumstance could be seen in the possibility that the training could be conducted by the teachers who have already received this kind of education, which would significantly reduce the costs. This training could be carried out during working hours if this would not interfere with the classes. The only obstacle may be people's resistence to change. Older teachers and professors are not very keen on computers or new information technologies. Generally speaking, when Serbia is in question, the

practical application of information technologies is at the beginning. The following graph can support the above statement (Figure 6). The graph illustrates the relation between computer use and computer users' age. This data were gathered after a thorough research had been conducted in schools in our country regarding the use of new technologies by the teaching staff (http://scindeks-clanci.nb.rs/data/).

The Graph shows that the duration of computer use is in indirect proportion to the users' age, that is, the younger the person, the more he or she uses the computer, while the majority of those who do not use it at all are over 55 years old.

Computer use in everyday work depends primarily on individual needs. However, a small percentage of the respondents 'have no experience' (half of them over 55) in this field, which shows that teachers mainly have basic or elementary, but insufficient, knowledge regarding the use of the new technology.

The majority of teachers have learned how to use computers either on their own or their friends have helped them or they have attended computer courses. This means that such courses can have a very important role in training the teaching staff. The statistics shows that the main motive for taking computer courses is acquiring basic knowledge in this field. Figure 7 illustrates this.

All the given answers, that is motives, except 'To have the necessary hours of education', basically have a positive attitude to getting computer training. Various seminars accredited by the Ministry of Education are organised with the aim of educating the teaching staff. However, the respondents' answers show that teachers usually attend these seminars not because they want to gain the necessary knowledge and training but because they have to be present there.However, there is a certain awareness that information and communication technologies are important. The computer courses organised at schools which teachers attend prove this. Another evidence is found in their attitude to this very problem - which was the subjects of the

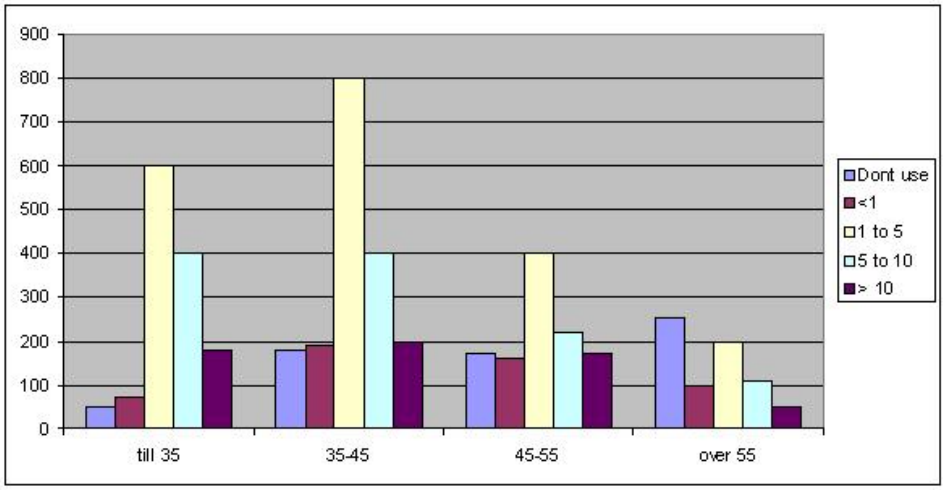

Figure 6. Duration of computer use with regard to the users' age(< 1, 1-5, 5-10, > 10 years) (http://scindeks-clanci.nb.rs/data/)

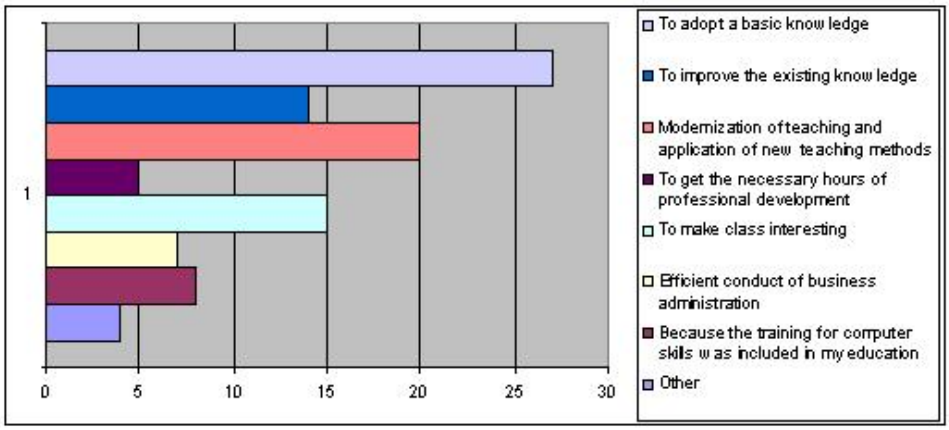

Figure 7. Presentation of the main motives for introduction of computer (http://scindeks-clanci.nb.rs/data/)

conducted reasearch. Since the overwhelming motive is 'adopting the elementary knowledge in computer use' the questions which impose themselves are the following: what is the subjective level of knowledge teachers tend to gain, and what is the level of knowledge objectively needed to fit into the world trends?

The research also showed that computers are used more for preparing the classes than during the teaching itself (Figure 8) but this may be related to the problem of whether computer equipment is available to schools in Serbia.

The teaching staff in Serbia uses most often those software packages that deal with text processing, which inevitably leads to the conclusion that computers are still viewed as little more than typrewriters.

The most important data the research revealed is the answer to the question ' Do teachers read the newest reports on computer use at schools and how do they get the news?'. Figure 9 shows that more than 50% of respondents, that is, teachers are acquainted with the developments in the new technologies regarding education, which is very encouraging. Younger people get the

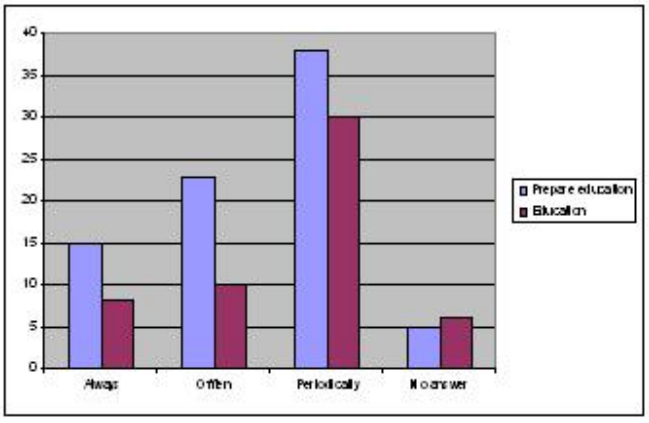

Figure 8. Using computers for preparing the classes and during the teaching (http://scindeks-clanci.nb.rs/data/)

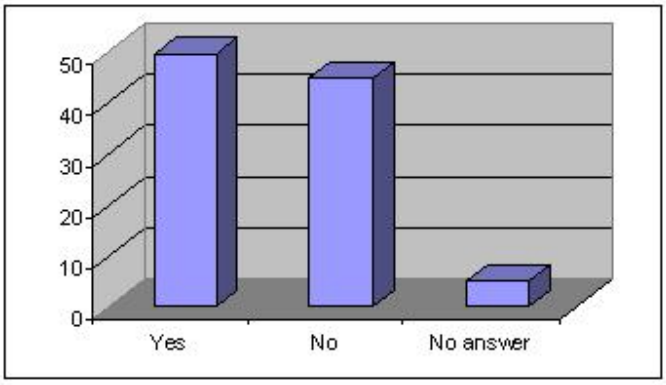

Figure 9. Monitoring of new technologies in education (http://scindeks-clanci.nb.rs/data/)

news over the Internet, while older teachers watch television and read newspapers.

The reasons for insufficient knowledge regarding new technologies could be various, but the most frequent ones are lack of free time and the fact that people do not believe in what is written in the newspapers. Having this in mind, more attention ought to be paid to staff training, and this refers to not only teaching them how to use computers but preparing them how to accept a better, more modern and faster ways of knowledge transfer and the importance of interactive classses. It is, therefore, necessary to enable teachers to be trained, that is, people who are in education but who will use the accredited information science programs have to be given a chance to educate their colleagues and teachers and this has to be the task of both the state and the education system in Serbia. Only the trained staff will be able to transfer their knowledge to the new generations of pupils and students in all fields of education. Educational policy is increasingly recognizing the role mentored induction support plays in new teachers' professional learning (Gardner, 2011).

Human society and its further development cannot rely on human greed, that is, on profit any longer. The industrial age and its postulates are dying away. What is awaiting the whole human community is the first half of the 21stC and learning how to use new technologies. The term 'learning' here refers to the use of technologies which aim is individual development, the development of production and the development of society as a whole. Otherwise, the society will still be only the consumer of technology with no idea of how to use it to its own advantage. As long as man, that is, the whole society with human work and knowledge at its core, does not get into the battle with himself and his deep-rooted habits, things will remain the same (http://scindeks-clanci.nb.rs/data/).

9. DISCUSSION

The expenses shown in Table 1 are arbitrary – based on assumptions. Among them there is the expense which can represent a significant burden for an education institution, and that is the publishing textbooks. Calculated, this expense amounts about 11200 Euros for four years. If we take into consideration the

expenses for preparation of references, including introducing e-learning, that is placing multimedia contents on the platform, for the priod of four years for all subjects, they will amount 16800 Euros. The difference between these expenses amounts 5600 Euros, in favour of multimeda contents. However, if we have in mind the fact that in recent years the textbooks have been sold less, because generations of students have been using the same textbooks (they exchange the textbooks among themselves), we can conclude that it is useless and very expensive to print a great number of textbooks every year. On the other hand, the scholarship can be increased for 50 Euros per each student, and that sum may be used for covering expenses for preparation of material for e-learning.

We can also calculate the sum of expenses for postal and carrier services: by introducing e-learning, they are significantly reduced. Total expenses for introducing the platform approximately amounts 41600 Euros. Assuming that the sum for investments amounts 40000 Euros, while the yearly net inflow based of increased scholarship of 50 Euros per student amounts 15000 Euros. Using the criterion of the term for paying back the investment, it turns out that the period of return of investment is 2.7 years, which means that in the first two years there are losses, while in the second part of the third year there is the return of investment and profit of 3400 Euros. Using approximate values for total income and expenditures, we come to the datum that medium yearly profit amounts nearly 7000 Euros, while in percentage the return of investments amounts 16.05%.

As regards computer technology in educational system in Serbia, researches showed that it is proportionally reversed to the age. The greatest number of teachers use computers from time to time, or they never use it for preparation of teaching hours. However, the encouraging data is that a great number of the examined (over 50%) are interested in development and using New Technologies in education.

10. CONCLUSION

To respond successfully to fast changes in business environment, it is necessary for the Top Management Team to choose proper business strategy, that is the managing strategy by which it is possible to adapt to changes, follow new technologies and innovations, but also choose the way of business operations which make munimum expenses. The Project of e-learning is the one which can reduce expenses in university-level education institutions.

Before implementation of any project, it is necessary to analyze financial aspects of investing, so that it would be possible to make adequate estimation of profitability, that is validity of investment (the Project). Investment profitability, such as e-learning, the criteria including term of paying bach the investment and return of investment, showed that this innovative project is very profitable and contributes to total reduction of expenses of any university-level education institution in Serbia. The time of the return of investment is really very short and amounts 2.7 years. This fact contributes to reduction of risk for changes of economic conditions. Listed reasons are strong enough to justify the investment of introducing e-learning into university-level education institutions. However there is always resistance to changes in any organization, there are also some obstacles that slow down the

realization of the project in majority of university-level education institutions. Aggravating circumstances refer mainly to using computers by older teaching staff who never use computers for preparation of teaching hours and in teaching. To prevent this, it is necessary to pay more attention to training the staff and using new technologies. In that way we can use up the possibilities they offer, among which it is surely reducing business operations expenses.

СТРАТЕГИЈА СМАЊЕЊА ТРОШКОВА УВОЂЕЊЕМ Е-УЧЕЊА У ВИСОКОШКОЛСКИМ ОБРАЗОВНИМ ИНСТИТУЦИЈАМА

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Извод

У савременом пословању компаније и менаџери се сусрећу са разним пословним изазовима и скупом изазова у решавању дефинисаних задатака. Зато је неопходно унапред обезбедити све ресурсе потребне за постизање дефинисаних циљева. Уколико нема потребних компоненти или инвестиција, нема ни репродукционог процеса нити ће компанија постићи жељене резултате.Основне компоненте пословања - радна снага, објекат рада и средства рада - су укључени у саму организацију као и њен технолошки процес у смислу употребних вредности. Потрошња ових компонената је предуслов за стварање нових производа и услуга. Како би адекватно нудили своје услуге потрошачима, у овом случају студентима, свака универзитетска институција мора бити опремљена адекватним средствима за рад и квалификованим персоналом. Ипак, саме пословне операције укључују неке трошкове које свака институција тежи да сведе на минимум. Трошкови у оваквим институцијама могу се додатно смањивати увођењем платформи за електронско учење. Овај рад представља пројекат увођења е-учења у једну институцију високошколског образовања, у Србији, као и умањење трошкова као резултат пројекта.

Кључне речи: систем високог образовања, трошкови, пројект, е-учење

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