

**SOCIAL NETWORKING SERVICES IN INTRA-ORGANIZATIONAL  
COMMUNICATION: THE CASE OF THE WARSAW SCHOOL OF ECONOMICS**

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**Abstract**

*The growing popularity of social networking services leads to the implementation of those solutions in intra-organizational environment. The Graduate Program Dean's Office in the Warsaw School of Economics developed official social networking services aimed at communication with students and teaching staff. The paper presents the results of a survey conducted on students, users of those services. The research shows that those services are widely accepted by the majority of students. However, some of them declined to use those sites. The study shows that social networking sites can be successfully used as an auxiliary tool for intra-organizational communication with students. But, they can be rejected by some users, which is a barrier to using them as the primary form of communication.*

**Keywords:** information society, social networking services, blogs, communication in an organization, Web2.0 applications.

**Introduction**

Social networking services appeared initially in the United States in the mid-nineties. Among the oldest are Classmates.com launched in 1995 (Kasavana, Nusair, & Teodosic, 2010) and SixDegrees.com 1997 (Boyd & Ellison 2007, p. 214). They were quickly followed by various sites specialized in different services, addressing specific geographical areas, as well as various social, professional or interest groups.

Social networking services can provide environments for the integration of people around certain spheres of activity (e.g. ecological, cultural, or political), projects or organizations. Over time, the popularity and importance of social networking sites have been recognized by commercial companies. They use the sites for marketing and promotional purposes, as well as to build the image of an organization (Berger & Schwartz, 2011; Petrescu & Korgaonkar, 2011). Social networking services are also a source of information about personal views and social trends (Casteleyn, Mottart & Rutten, 2009). They can be used, as well, by organizations in the sphere of education, not only for marketing purposes, but also for teaching and integrating academic communities (Moran, Seaman & Tinti-Kane, 2011).

A blog is a form of a web page containing chronological entries of personal nature (Baoill, 2004). Blogs evolved from online personal diaries. The term weblog was first used in 1997, and the blog in 1999, although similar forms of online publications had occurred earlier (Wortham,

2007). Currently, all blogs and their authors interconnected by links and comments, called the blogosphere, are treated as one big social network in which the authors publish their opinions (Kirchhoff, Bruns & Nicolai, 2007). Blogs tend to be used by academics in teaching as a form of a discussion and a seminar. Also, students are sometimes required to create blogs as a part of a course (Downes, 2004; Cobanoglu & Berezina 2011).

Some tertiary education institutions, also in Poland, as well as some organizational units of colleges and universities have their official blogs. Usually, their field of interest is moving quite freely around themes related to the academic life of universities and scientific topics interesting for authors of those blogs. Whereas, few entries are related to organizational or procedural matters related to study and management of universities. Examples of such blogs are:

- St Peter's Blog Website – St Peter's Collage, University of Oxford, <http://blog.spc.ox.ac.uk/>,
- BU Now – Boston University, <http://blogs.bu.edu/bunow/>,
- A Slice of Advice – The Official Blog of Syracuse University Career Services, <http://sliceofadvice.syr.edu/>,
- YOURblog – Your Official University of Regina Blog, <http://www2.uregina.ca/yourblog/>,
- The Official Blog of University of Lodz – <http://unilodz.blogspot.com/>.

Social networking services, including blogs, are generally treated as public media. Consequently, most studies of social networking have been conducted with public internet communities. However, the content created by authors can be addressed to private audience, not only family and friends, fellow professionals, but also work colleagues, or company employees (Dutta, 2010 p. 129). Also large organizations try to use social media, particularly blogs and forums, as a platform for internal communication and collaboration, what also is represented in research (Brzozowski, Sandholm & Hogg, 2009; Jackson, Yates & Orlikowski, 2007; Muller et al., 2012). The aim of the author is to explore a relatively new and less studied aspect of social networking services in higher education institutions, a blog created by university authorities addressed to students.

### **Intra-organizational social networking services of the Warsaw School of Economics**

The Dean's Office of Master's Studies at the Warsaw School of Economics (WSE) started its official social networking services in September 2012. These services are not aimed at the general public, but they are addressed to graduate students and teaching staff of the WSE. The intention of the initiators and authors of those sites, the Dean of Graduate Studies Dr. Magdalena Kachniewska and the Vice Dean of Graduate Studies Dr. Katarzyna Gorak-Sosnowska (2012), was "to improve the flow of information and to simplify (and even enable!) obtaining the opinions of students and faculty members on procedures, rules and service quality of the Dean's Office" (p. 24). At that time, the WSE official website was widely criticized for being badly designed. Both staff and students complained about the difficulty in finding needed information. In many cases, students did not know the applicable procedures and regulations, which caused tensions in relations with deanery employees.

Previously, various forums had been developed, aimed on exchanging opinions among students on topics related to the WSE and their classes. However, those services had not been, in any way, the official sources of information about the School. Some representatives of the Warsaw School of Economics had conducted some moderated Q&A services answering the questions raised by the academic community. These types of sites are often private, and are available only to users identified as members of a university community, for example through the confirmation of e-mail address ownership in a network domain of an university.

Therefore, the project undertaken in the WSE by the deans was a quite unique venture. The Dean's Office created three interrelated social networking services:

- The Graduate Dean's Office blog: On the other side of the window (*DSM: po drugiej stronie okienka*) – <http://takdladsm.blogspot.com/>,
- The page: Yes for the Graduate Dean's Office (*Tak dla DSM*) in Facebook – <https://www.facebook.com/pages/Tak-dla-DSM/206263802749991>,
- The official account of the WSE Graduate Dean's Office on Twitter – [https://twitter.com/Dziekanat\\_SM](https://twitter.com/Dziekanat_SM).

The main information role is played by the blog, whereas the Facebook page and the Twitter account perform complementary functions. Most messages in these two sites inform about blog entries and provide links to these entries.

The Graduate Dean's Office blog uses Blogger. It is blog-publishing service originally developed by Pyra Labs, which currently belongs to Google. It uses a [blogspot.com](http://blogspot.com) subdomain to host blogs.

Within one and a half years of blog existence (from September 2012 to February 2014), the authors created 285 entries on the blog. The highest number was 56 entries in October, soon after the opening of the blog, and the smallest was only two entries in August 2013, during the summer holidays. On average, the number of entries has stabilized at about a dozen per month.

## **Research purpose and method**

The use of social media by university authorities to communicate with students is not an obvious and popular approach. Students cannot be identified with customers buying some goods or services (in this way it can be perceived by potential candidates), but rather should be considered as members of the academic community, actively participating in various activities formally related to the course of study, as well as initiated by students and student associations. Therefore, it can be concluded that the communication of university authorities with students is of intra-organizational nature.

Naturally, since the Dean's Office social networking sites are publicly accessible, they can also play a marketing role. However, it is not their main purpose.

The aim of the study was to determine the extent to which these services fulfill a predetermined role. Typical statistics of visits and entries are available in the content of the blog. But, they do not represent the actual perspective of the blog users. Whereas, the author conducted a survey of

students towards which these social networking sites are addressed. The results of this study can be used when planning similar projects by other institutions of tertiary education.

The survey was conducted in December 2013, over a year after the launch of these services. The high level of external validity was achieved as the result of distributing questionnaires to randomly selected classes from different majors at the graduate level. The survey was conducted using a group administered questionnaire, hence the respond rate was 100%. A total of 113 fairly filled in questionnaires were qualified for analysis. The respondents were students from different semesters, respectively:

- 25 students of the first semester,
- 36 students of the second semester,
- 47 students of the third semester,
- 5 students of forth and further (in case of prolonging studies) semesters.

A small number of respondents from the last semester of study is caused by the specific nature of this semester. It includes few lecture classes, during which the survey was conducted, whereas, most of the time during that semester, students spend on seminars and writing thesis.

Questionnaires taken into account in the analysis presented below were completed by 61 males and 52 females.

## Survey results

The study shows that 20.4% of the surveyed students have never visited the social networking services of the Graduate Dean's Office (see Figure 1). What's more, further 12.4% of respondents checked them only once or a few times, but they have not visited them since then. Thus, these services did not meet completely the established informational function to nearly one-third (32.8%) of students.

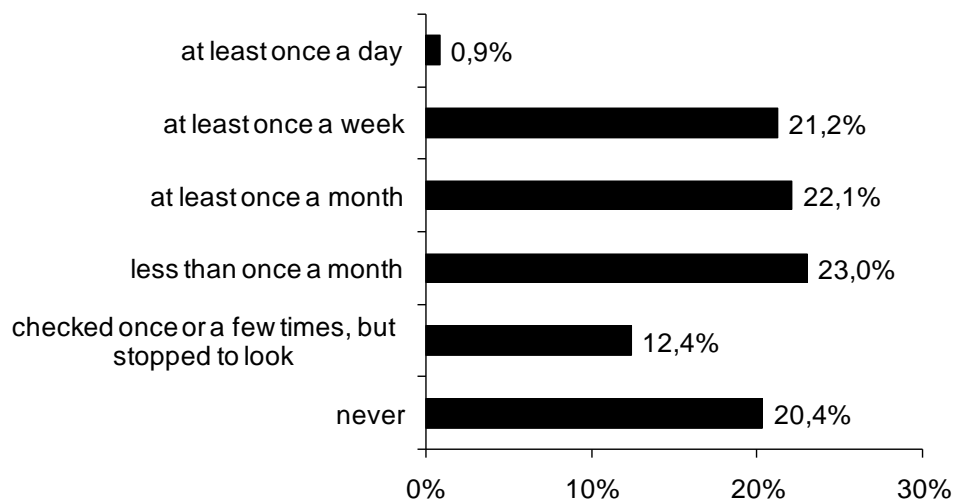


Figure 1. The frequency of using by students the social networking services of the Graduate Dean's Office at the WSE.

Fulfillment of the informational role by a web service within an organization is dependent on the frequency of use of these sites by persons to whom it is addressed. There is an average of a dozen or so entries per month in the Dean's Office blog. In the author's opinion, in order to serve a vital informational role for a student, the site should be visited once a week, or at least once a month. It turns out that this minimum frequency of visits to the social networking services of the Graduate Dean's Office was declared by less than half (44.2%) of students. Moreover, only 22.1% of respondents checked the services very regularly, at least once a week, allowing them to be up to date with the blog entries and discussions (see Figure 1).

Respondents who have never used the Dean's Office social networking sites, were asked about the reasons for this situation. Most of them stated they had never heard about these sites (see Figure 2). These answers are surprising, because information about it and links to these sites are provided, inter alia, on the official website of the graduate program. On the other hand, almost one-third of this group of respondents declared that they did not think that they needed these services for any purpose. And one of the students indicating other reasons explained that "I think it is not serious for the Dean's Office to run a blog."

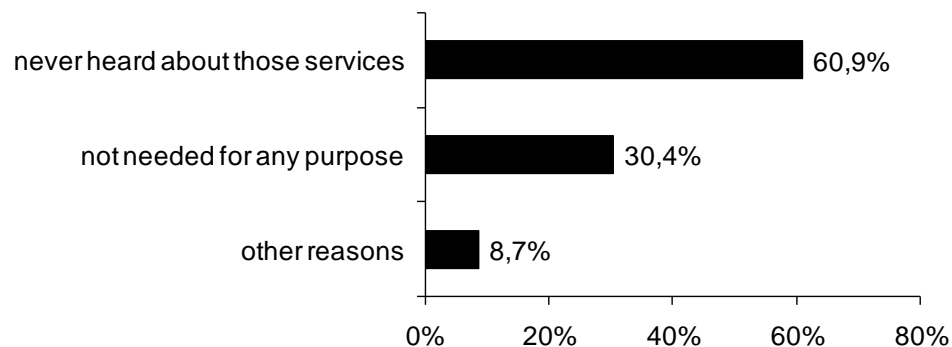


Figure 2. The responses of students who have never used the social networking services of the Graduate Dean's Office at the WSE to a question about the reasons for this situation.

The official website for graduate students, which existed at the time of the creation of the Graduate Dean's Office social networking services, had the reputation of being extremely non-transparent, with unclear content structure and user-unfriendly layout. Those factors were causing difficulties in finding required information. Therefore, the students who used the Dean's Office social networking services were asked about a main reason for starting to use the services (see Figure 3). The majority of respondents (53.3%) indicated the difficulty in finding information in other sources (e.g. standard official websites, or information boards at the Dean's Office). Approximately one-third of the respondents were simply curious. Among other mentioned reasons for starting to use these sites stands out the answer: "to submit a proposal improving Dean's Office administrative procedures". Other respondents gave reasons related to

general usage of social networking services, for example: “suggestion in a social networking site” or “easy use of social networking sites”.

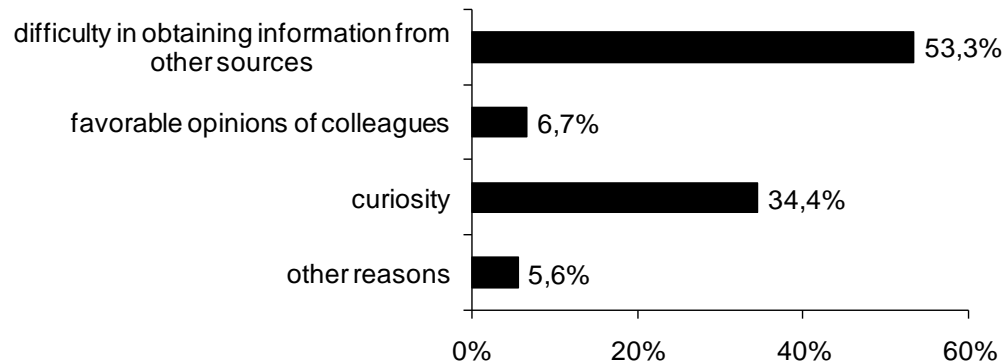


Figure 3. Respondents' answers to a question about a main reason to start using the social networking sites of the Graduate Dean's Office.

A crucial feature of a blog, as a part of a blogosphere social network is a possibility to add comments by blog readers. Moreover, the intention of the authors of The Graduate Dean's Office blog was to obtain feedback from students. Therefore, students who use the social networking sites were asked how often they actively use them: ask questions, or add comments (see Figure 4). One respondent declared very frequent and regular entries. In addition, 17.8% of respondents made at least one entry. This means that almost every fifth student using these sites has added some content: a comment or a question. However, 81,1% of users have never passed back any feedback.

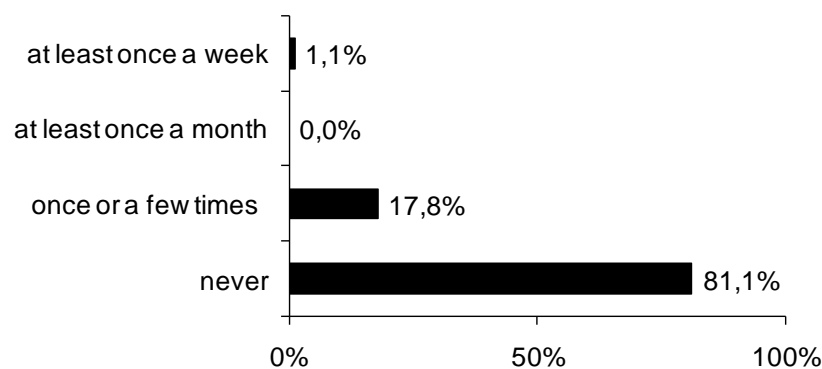


Figure 4. Respondents' answers to a question about the frequency of making entries on the social networking sites of the Graduate Dean's Office.

The data obtained from the survey on the use of the social networking sites of the Graduate Dean's Office were compared with general data on the use of any other social networking services (e.g. Facebook, Instagram, YouTube, Twitter, LinkedIn, etc.) by the same respondents. The survey shows that 8.0% of students have never used any social networking services at all

(see Figure 5). Further 1.8% of respondents used them relatively rarely, less than once a week. The percentage of students not using social networking sites seems to be a fairly stable value. A study conducted by Polanska (2012) on undergraduate students at the WSE showed that 7.2% of respondents did not have an account in social networking services (p. 38).

All respondents, who declared not using other social networking services, did not use the social networking sites of the Graduate Dean's Office as well. At the same time, they constituted 39,1% of all students who have never visited those official sites. Therefore, reluctance to use social networking services in general is a major barrier to the implementation of such services for intra-organizational communication.

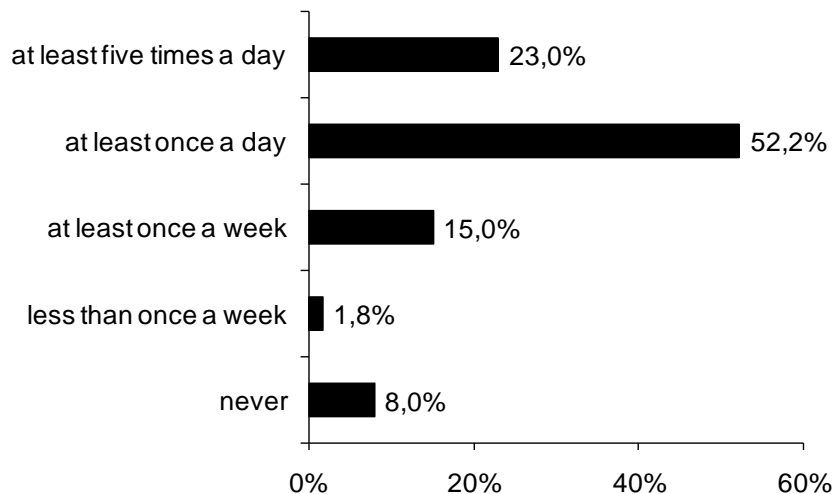


Figure 5. Frequency of using other than dean's office social networking services by graduate students of the WSE.

The study shows a strong correlation between gender and unwillingness to use social networking services, including those created by the Dean's Office in the WSE. All students, who have not used social networking services, are males (see Figure 6). Moreover, males make up 82,6% of respondents who have never visited social networking sites of the Graduate Dean's Office.



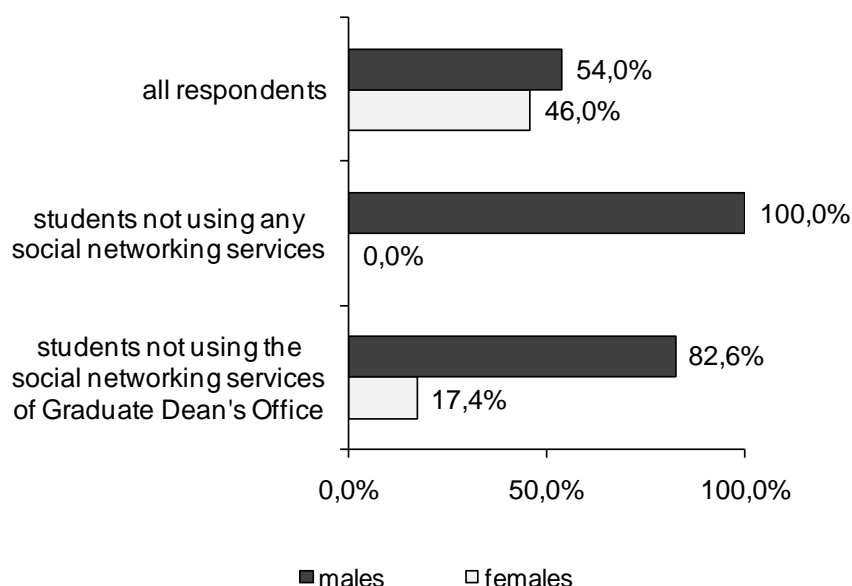


Figure 6. Gender participation in the survey sample and in the group of respondents who do not use social networking services.

### Conclusions

The usability of a blog can be evaluated with two key measures: the frequency of visits, and the frequency of making entries, which respectively represent passive and active use of the blog. Taking into account the purpose and amount of blog entries, the Dean's Office blog fulfills its role if a student visits it at least once a month, and makes an entry. The Table 1 summarizes these results.

Blog usability measures	The percentage of students using the blog at a satisfactory level
The frequency of visits	44.2%
The frequency of making entries	18.9%

Table 1. The evaluation of the Dean's Office blog usability.

The results of the survey show that social media fulfill their role only as an additional communication tool between students and the dean's office. Many students use these sites, some quite actively. However, there is a large group that is not interested in using this medium in communication with the administration of the university. The unwillingness to use these services is related to the reluctance to use any social networking services. The survey shows that the gender factor plays a significant role, mostly males do not use social networking services.



The investigated case shows that the use of social networking sites has some limitations. Even among students, who are mostly young people in their twenties, the significant group does not use at all social networking services and is not interested in using them. So, it is a difficult barrier to overcome in case of implementing social networking services as primary means of communication. It is reasonable to conclude that if not all the students accept this medium, it is possible that in other social, age, or professional groups these restrictions are even stronger. It is difficult to assess whether, in the future, even the near future, this situation will change and in which direction. In order to verify it, it is necessary to repeat the survey in subsequent years.

The article presents quantitative data on the use of social networking services by the university. Further research and publications can include also a qualitative content assessment of these sites and a survey of user satisfaction.

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**DEVELOPMENT OF THE EDUCATIONAL-RESEARCH STANDARDS BASED ON THE COOPERATION OF ACADEMIC CENTERS WITH EMPLOYEES OF THE INTERNATIONAL CORPORATION ON THE BASIS OF OWN RESEARCH.**

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**Abstract**

*Corporations operating on international markets as well as academic centers are interested in cooperation and development of human resource management standards that will ensure corporations the innovative advantage over competition and universities the employment for their graduates. Example of own researches of creating processes for appointing the leaders of innovation in the company and development of educational systems consistent with market requirements. Competition, innovative contests, discussing positive and negative effects of the employees' and students' active stimulation.*

**Keywords:** The international corporation HR standards, the university education as the highest employment rate of its graduates, leaders of innovation, students on labour market.

**Introduction**

Creativity, innovative contests and common research projects of companies and universities can not only enrich the educational offer and support students but also motivate the employees to achieve professional success, which is more important than graduation or any training. Employers and universities which want to have intellectual, innovative and creative advantage are interested in creating such employment, motivation and innovation standards that would ensure not only the advantage over competition but also enable the constant top position in the market [1].

The idea of cooperation is not anything new; companies, local governments and people themselves have always been interested in it. Immediately as the term of education has been formed, it has started the search for ways of an effective education. It is also nothing new that knowledge is better absorbed with the help of experiments, practice or case study. The teacher cannot only base on theory and experienced person just on experience.

Therefore, there are different ways of stimulation by government institutions and local authorities. One of the examples is a long-term project initiated by the OME which obliged the teachers of technical subjects to increase in their educational programmes commitment of local business and industry.

Below is the comparison between training courses for corporations and educational programmes in academic centers [1].

TRADITIONAL EDUCATIONAL PROGRAMME  focused on:	MODERN EDUCATIONAL PROGRAMME  focused on:
General knowledge	Utility programme
Written communication	Oral communication
Personal education	Interpersonal education
Internal education	External education
Gaining basic skills	Gaining expert skills
Thinking	Problem solving
Understanding	Gaining information
Explaining concepts	Defining problems
Transmission of theoretical knowledge	Exchange of experience and transmission of working knowledge
Statement-based learning	Experiment-based learning

Table 1. Source: R. Barnett, G. Parry, K. Coate, Conceptualising Curriculum Change.

The TP Equity Group has increased the employee engagement in the innovative and production process by introducing the cooperation with academic centers. Additional advantage is the acquisition of best students and positive corporate image.

The main goal of this article is to analyse the effects of introducing solutions from the innovative contests held in the years 2002 – 2012 within the TP Equity Group. The article confronts four editions of the innovative contest with four examples of innovative projects in cooperation with academic centers:

☐ Programme “Your Perspective” for technical and economy faculties students from the main universities in Poland;

- Project "Land of the Rising Innovation", prepared with the help of the lecturers from the Jagiellonian University in Cracow and processed from the IT side in the years 2009-2011 by the CL S.A. company, which has so far provided TP with IT workshops systems;
- Project "Become an engineer of the future", based on workshops, training programmes and industrial projects in which cooperate condensing teams consisted of employees from the Silesian University of Technology and the TP Equity Group;
- Condensing protection of the TP Equity Group brand ambassador for the Silesian University of Technology.

Results of the research, which start a discussion about payoffs and bad results of contests as a motivation instrument for students and employees, are presented at the end of the article.

## **Research material**

**"Your perspective"** programme is a number of initiatives taken by the TP Equity Group in the years 2008 – 2013 in cooperation with 16 main universities in Poland, which resulted in:

- 103 trainee positions;
- 122 workshops on universities in Poland;
- 141 ambassadors (specially selected group of students, which role is to inform their colleagues about programme, workshops and job opportunities);
- 500 participants in 11 Students Orange Clubs meetings;
- 2320 participants in workshops on universities;
- 6410 participants in Your Perspective contest.

One of the effects of "Your Perspective" has been the creation of new initiatives within the programme such as "Innovations Farm [1] or "Open Middleware 2.0 Community" [2], which have enabled the students and university employees to gain knowledge and experience thanks to the workshops about the latest trends on IT and telecommunications market.

**"Land of the Rising Innovation"** is the name of the project that has been realized from April 2009 to January 2011 for the TP Equity Group [3]. The workshop program has been created based on the innovative education method, which is the integrated system of several teaching forms: e-learning, virtual classes and workshop lessons. The Creative Problem Solving (CPS) [4] has been discussed as a heuristic method (experience-based techniques with a set of tips, but not algorithm [5]) of complex problem solving approach, which increases the chances for effective and innovative problem solving as well as for implementation of innovations [6], [7]. Workshops prepared by the lecturers from the Jagiellonian University in Cracow were held with the use of blended-learning method as two one-day stationary workshops and three 6-hour e-learning sequences [8], [9].

The project has been financed from the Operational Programme "Human Resources Development" that in 85% has got funds from the European Union. The total budget provided for the project is 973,000 zlotys. Thanks to the funds 408 people from among 30,000 employees of the TP Equity Group has been trained.

Project **“Become an engineer of the future”** has been realised from October 2012 to the end of 2015 within the Operational Programme sponsored by the European Union and under the name “Human Capital. Higher education and science, strengthening and improving qualifications of the academic staff as well as increasing the number of graduates corresponding to the requirements of knowledge economy” [10]. All the workshops consisted of five 6-hour lectures which subject matter has been prepared together by the industrial and academic mentor. Until the end of 2015 there is supposed to take part in the workshops 224 full-time IT students from the Faculty of Automatic Control, Electronics and Computer Science of the Silesian University of Technology. The workshop initiatives followed directly from the industry and included implementation of IT instruments in industrial production, automatic control, motorization, IT, telecommunications and others.

The table below shows the course of the initiatives taken by the TP Equity Group

Year	2012	2013	2014
Number of students /Realised material	8/2	4/1	4/1
Student’s positive opinion of the company	0 z 8	4 z 4	?
Developed technical innovations	0	4	?

Table 2. Project “Engineer of the future. Source: Own analysis.

Within the practical tasks on the subject “Selection of teletransmission systems alarms exemplified by the network of Orange Business Service OBS” students have been acquainted with the practical knowledge about:

- ☐ Configuration of the VPN network for the OBS customers;
- ☐ Assignment of the IP address for the OBS router interface;
- ☐ Router configuration for the OBS customers considering constant monitoring of the service;

- ☐ Distribution of the Equant and SEAiS database for the OBS customers;
- ☐ OBS Service Management Center (presentation of the access node and multiplexer mock-up).

The second subject “Permanent analysis of condition of the telecommunication services xDSL, Business Everywhere” consisted of workshops about:

- ☐ Creating connection in the VPN (FR) technology for the OBS customer;
- ☐ Creating connection in the VPN (ADSL) technology for the OBS customer;
- ☐ Router configuration from the PE (Provider Edge);
- ☐ Router configuration from the CE (Customer Edge).

The third subject “Configuration of the access devices for the IP VPN OBS service” resulted in development of the solution called automatic configuration generator which enables an automatic programming the OBS telecommunication devices.

The fourth subject will be devoted to improvements of automatic configuration generator and an attempt to include the IP VPN OBS service to the production process of distribution network. Despite its limited reach the programme perfectly illustrates the change of the corporate image. Thanks to the project it could be immediately noticed how direct contact and joint work influence the change of opinion about the company and its services.

On the first classes students were given a test about the telecommunication services they know, however, they could not point any. They were also asked whether they could recommend any of the TP Equity Group services, but still the answers were assertively negative. On the last classes the students got the same test and the answers were completely different. They named from several to more services and they have absolutely recommended the services offered by the TP Equity Group.

**Industrial mentor** programme is the smallest and the most modest initiative compared to the ones presented above, which is meant for selected students of technical and economic majors from the main Polish universities. Within the project the industrial mentor, who is chosen from the employees of the TP Equity Group, gives content-related support to the brand ambassador in the university. The industrial mentor is offered a two-day workshop consisted of such subject as coaching, mentoring and training, whereas the student gains the knowledge about the recruitment process, job consulting and self presentation. Then, mentor and student create together a programme for university open days with lectures, equipment presentations as well as contests for the academic community.

### Comparison

On the whole, such form of education of theory through practice is generally appreciated. The development of modern communication methods like the possibility of teleconferences and self-



presentations as well as problem-solving scholarship materials in the Internet, has only facilitated and shortened the distance between school and company [13].

Many cooperation programmes for school and business, which support and finance the education, are successful within the European Union. One of the oldest programmes of revitalization of rural areas realized since late 80's within the Da Vinci project, is EUROPEA "Coping with Challenges on Vocational Education and Training "Good practices in cooperation School-Business and in Entrepreneurial Competences Learning"- COPCHAVET [14], which is a programme referred to agricultural schools and businesses as well as agro tourism farms and companies.

In North America the concept of „Business-education partnerships” has gained the biggest number of studies[15]. There has been classified and defined the areas of cooperation, law regulations and strategies.

When it comes to Asia and Australia, there are more radical cooperation terms, scholarships or trainings for students; it advisable to implement them into the company's strategy and realize them statutory [16].

### **Results**

The table 3 summarises the most important initiatives to motivate the employees of the TP Equity Group considering the submission of innovative solutions.

<b>Competition : submitted projects</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2012</b>
<b><u>Category I</u> Organizational improvements</b>	?/2	47	51/35	36/18	161/107	104	138	84	118	144
<b><u>Category II</u> Technical innovations</b>	?/3	43	43/29	26/15	91/55	79	97	48	58	106

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<b>Category III</b>										
<b>Corporate image</b>	?/1	30	27/5	21/2	79/17	71	87	42	49	-
<b>Category IV</b>										
<b>Services</b>	?/2	45	38/5	43/7	81/19	88	108	86	130	164
<b>Category V</b>										
<b>BIS</b>	No data	No data	No data	No data	No data	17	58	28	51	69
<b>Total number of submitted projects</b>	?	165	159	126	412	359	488	288	406	483

Table 3. The number of submitted projects by the employees of the TP Equity Group for the competition in the years 2002-2012. Source: Own analysis based on data from the Intranet,

All the projects and initiatives taken by the TP Equity Group are in close connection with the annual performance review as for every submitted and accepted initiative employee gets points in the evaluation process and the authors of the best projects can even count on financial gratifications.

The supplemented TP Equity Group workshop offer has as well improved the quality of the submitted innovative projects, which are not obvious at first sight in the Table 1. It is the quality of prepared projects. There are two parameters for each category in the years 2004-2006. For instance: in category I (organizational improvements) the number of submitted project was 51 in the year 2004, which makes 68% effectiveness of the proposed solutions. In 2006 the comparison looks similar as there were 161 submitted projects and 107 implemented (66%), but only 15 projects from among submitted were suitable for implementation in the following year. The remaining 92 ideas were qualified by the committee as: 36 projects that require operational details and 56 projects accepted as good but the implementation was completely without the operational model. Therefore, the effectiveness rate of proposed solutions in the year 2006 was only 9,3%.

One index is the number of presented and implemented solutions, however, there are also measurable financial profits gained by the company and published in the annual reports for the stock exchange investors or in the financial reports.

The art of creative thinking [11] is the way to develop skills apart from the stereotypes, original problem solving, creative techniques as well as exploration, combination and transformation of the creative tasks.

### **Conclusion**

Below are given the most important conclusions from the projects:

- ☐ It is essential to support academic and industrial centers in their cooperation;
- ☐ For the company that has no research center any forms of trainings or workshops are disturbing the production process which is the source of its profit;
- ☐ One benefit for the company is the possibility to avoid, reduce or commission the recruitment process to the academic center;
- ☐ In the period of economic slowdown company can reduce the forms and means of cooperation with universities;
- ☐ Cooperation with academic centers supports the innovation among the employees;
- ☐ Effects of the cooperation with the academic centers enable to increase the number of ideas and innovations, however, the quality and cost of implementation discriminates these solutions;
- ☐ Thanks to the cooperation with academic centers the whole corporate image improves,
- ☐ Education as a non-profit activity requires financing, thus, every form of well-prepared and conducted support is profitable for cooperating school and industry.

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## **MAPPING KNOWLEDGE: THREE ONTOLOGICAL PARADIGMS**

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### **Abstract**

**Introduction.** The mapping of knowledge has been a historical human endeavor; thus, it is a metaphor of how humans represent an envisioning of the known. Members of societies, or groups, everywhere, in the present and at the dim horizons of historical consciousness have created maps of their societies', or groups', knowledge. These are not merely dictionaries, encyclopedias, or maps of navigation or travel to faraway places; they are pictographs, cave drawings, or ikons. Every human cultural artifact, or informing object, can be a mapping of some aspect of the culture which has envisioned the object (Liebowitz, 2002; Skovira, 2010).

**Problematic.** The problem, sourced in the knowledge management literature which presents a tangled and confusing set of ideas, for this paper is to describe and analyze the silent frames or perspectives, or ontological paradigms, which shape and define the methods of knowledge mapping, and the known objects mapped.

**Essay's argument.** The essay argues that mapping of knowledge is both a personal and an organizational affair; a map charts the known and visible (and explored) terrain, a mapping of the knowns one lives-with and by means of. As a human cultural artifact, a knowledge map can be representative of experienced situated knowledge objects as either semantic constructs and meaning-systems, or practices and social constructs, or cognitive schemas and psychological constructs. In any event, it is a map of the possible known knowns of a traveled-in world (Bourdieu, 1977; Norman, 1983; Dewey, 1986; Norman, 1988; Bruner, 1990; Dewey, 1991; Brown & Duguid, 2000).

**Ontological frames.** A knowledge map is a metaphorical recording of the ontology one lives-in, and the knowns lived-with; a map makes visible visited and significant locations in a knowledge landscape. Thus, the essay argues that a knowledge map is an ontological metaphor which presents a perspective of the knowns, not only possible, but actual, and used in the everyday organizational, and perhaps personal, situations of problem-solving and decision-making. An ontology, for this essay, is descriptive of a convivial, lived-in event world, an experiential source of a discursive perspective which is sourced in the symbol-systems (languages) used to describe and analyze situated affairs and events (Polanyi, 1962; Lakoff & Johnson, 1980; Gruber, 1993; March, 1994; March, 1997; Skovira, 2007).

**Crypto-perspectives.** The paper argues that, while a map is not the terrain as Korzybski (1958) writes, the topography of the map represents features of the terrain imagined, envisioned, or known as real features of a lived-in world. This envisioning is conditioned by crypto-frames or perspectives which posit that known and knowable objects are either psychological constructs, sociological constructs, or semantic constructs. What one knows or claims to know is formed in and by the ontological paradigm in silently in place. This paradigmatic frame supplies the vocabulary, and the named objects and situations. The language one uses to talk or write about

things-in-view is a medium of description and analysis of observed and reflected upon objects. The paper argues that a knowledge map is an instrument of reference and inference of aspects of experienced things of a lived-in world; the map is a semiotic device (Goffman, 1974; Eco, 1976; Dewey, 1991; Chandler, 2002; Dewey, 2008).

World envisioning. The paper argues that knowledge map makers or cartographers use methods which are dependent on a dominate crypto-frame, for their map making. The method names and describes the existing objects of knowledge in a lived-in world. This lived-in place is the knowledge geographers' universe of experience; a knowledge map is a metaphorical geographic envisioning of a universe of discourse and language (Polanyi, 1966; Dewey, 1986; Nonaka & Takeuchi, 1995; Nonaka & Konno, 1998).

Discursive realities. The lived-in world is mapped differently by knowledge geographers who see (and talk about) the world as an entirety of psychological constructs, or sociological constructs, or semantic constructs. In other words, constructing and drawing knowledge maps (as instrumentalities of a universe of discourse) using different ontological perspectives will produce different objects known and knowable in different worlds, representing different world-views (Berger & Luckmann, 1966; Bateson, 1972; Dewey, 1986; Davenport & Prusak, 2000; Hofstadter, 2007; Garfinkel, 2008).

**Keywords:** knowledge map, ontology, mental models, practices, social constructs, meaning-systems, symbol-systems.

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**VISUALIZATION FOR LEARNING IN ORGANIZATION BASED ON THE  
POSSIBILITIES OF VENSIM**

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**Abstract**

*The aim of our paper is a presentation of some new possibilities of simulation language Vensim(version 6.0) based on process of learning in organization. Specially the visualization setups of this language is on the center of interest of authors, who studied the problem of sensitivity analysis and optimization during the simulation of the dynamics of many objects: economics, ecology, engineering. Many methods and tools have been used by authors during last two decades, but only now with new version of Vensim, we have full possibilities of visualization for learning in organization. The problem is: “how to take advantage from these possibilities, and perform such methodological tasks like: sensitivity analysis, optimization (especially calibration), games on simulation models”. Knowledge management requires modern, interactive and friendly interfaces for users (analytics, modelers, managers). The problem is interdisciplinary and requires collaboration of specialists with many disciplines: informatics, mathematics, economy, sociology, psychology. In our opinion, popularization of our study with the use of Vensim 6.0 gives the audience new look for the learning in organization, using models and simulation for solving managerial problems in complex, nonlinear, dynamical and multilevel systems.*

**Keywords:** System Dynamics, Simulation, Sensitivity Analysis, Optimization.

**1. Introduction.**

Analysis, modeling and simulation of complex, non linear, dynamical and multilevel systems have a long history, especially in the area of famous System Dynamics method (see: [1] - [10], [25] – [27]). Modern simulation languages, such as Vensim [28] allow to connect the simulation with optimization and in this way to estimate sensitive parameters in modeled objects and choose the optimal decisions. The range of modeled objects is quite wide, from industrial models, to ecological or economic. The review of famous application of SD method the Reader can find in monograph[21]. The application of SD method allows to answer of such questions like: what if? (typical for simulation type prognostic), what structure is conditioning the observed behavior of the system over time? (type descriptive – explanations study ), how optimal in particulars conditions? (normative, optimization investigation). The latest are not so popular like, in our opinion, should be. Authors of this paper have some experience with so called embedding simulation in optimization and vice-versa, working with family of models named DYNBALANCE(see: [12] - [23]).

But only now working with new version of Vensim [28], we performed such experiments, like: calibration and interactive game. Some new results of our study are presented in next chapter, and at the end some conclusion are formulated.

The SD models contain usually many parameters. It is interesting to examine the effect on their variation on simulation output. We select some parameters and assign maximum and minimum values along with a random distribution over which to vary them to see their impact on model behavior. Vensim has a method of setting up such sensitivity simulation. Monte Carlo multivariate sensitivity works by sampling a set of numbers from within bounded domains. To perform one multivariate test, the distribution for each parameter specified is sampled, and the resulting values used in a simulation. When the number of simulation is set, for example, at 200, this process will be repeated 200 times. In order to do sensitivity simulation you need to define what kind of probability distribution values for each parameter will be drawn from. The simplest distribution is the Random Uniform Distribution, in which any number between the minimum and maximum values is equally likely to occur. The Random Uniform Distribution is suitable for most sensitivity testing and is selected by default. Another commonly-used distribution is the Normal Distribution (or Bell Curve) in which that values far from the mean. Results of sensitivity testing can be displayed in different formats. Time graphs display behavior of a variable over a period of time. The variables spread of values, at any period in time, are displayed either in terms of confidence bounds, or a separate values which combine to form individual simulation traces.

Such sensitivity analysis is the entrance for optimization. Optimization can be used to validate and estimate parameters (calibration), or to select among alternative policies (policy optimization). In order to use optimization, you will need to define what is good and what is bad – called the payoff. The payoff is a measure, reported at the end of the simulation, stating numerically how good the simulation was. After defining the payoff, you need to select which Constants to vary in order to maximize the payoff. The payoff for a model can be defined in terms of a comparison of model variable. These two types of payoffs are known as calibration payoffs and policy payoffs. You can set up the Optimization Control file from the Toolbar, which is very “friendly” for user of Vensim. In next chapter of our paper the example will be presented for supply chains from paper [30].

## 2. Example of knowledge management for supply chains, using Vensim.

To show the vast abilities of Vensim we have chosen the information delay model firstly presented by Hakan Yasarcan and Yaman Barlas in their paper [30]. The authors mentioned about how to correct the instability of model and considered a solution – the virtual supply line concept. Now we will show the possibilities of that solution.

Information delays are involved in flow of some effect from one location to another or in information processing. They can be part of some typical stock management problems (in example order-filling delays or order decision delays). A generic example could be the information delay between two departments of a company. This model is presented below in

Figure 1.

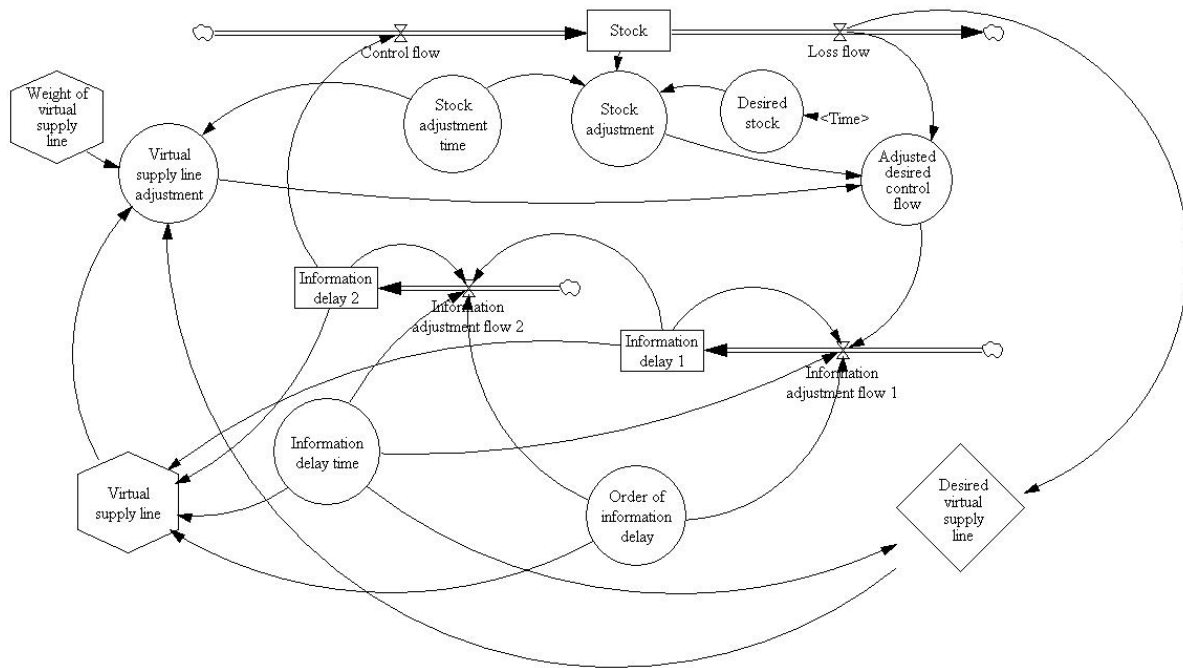


Figure 1. Model: information delay between two departments of a company (source: own results)

List of variables and parameters of model:

Loss flow = 4

Stock adjustment time = 4

Information delay time = 21

Order of information delay = 2

Control flow = Information delay 2

Desired virtual supply line = Information delay time\*Loss flow

Stock adjustment = (Desired stock-Stock)/Stock adjustment time

Adjusted desired control flow = Loss flow +Stock adjustment +Virtual supply line adjustment

Information adjustment flow 2 = (Information delay 1-Information delay 2)/(Information delay time/Order of information delay)

Virtual supply line adjustment = Weight of virtual supply line\*(Desired virtual supply line-Virtual supply line)/Stock adjustment time

Information adjustment flow 1 = (Adjusted desired control flow-Information delay 1)/(Information delay time/Order of information delay)

Virtual supply line = (Information delay time/Order of information delay)\*Information delay  
1+(Information delay time/Order of information delay)\*Information delay 2

Let's focus on Weight of virtual supply line (Wvsl) - the parameter responsible for supply line adjusting. When Wvsl equals 0 (zero) the information delay is ignored in the decision formulation (in our case the information would be the change of desired stock from 10 to 9 – see Yasarkan paper [30]). This results in unstable oscillations of the stock as we can see in Figure 2.

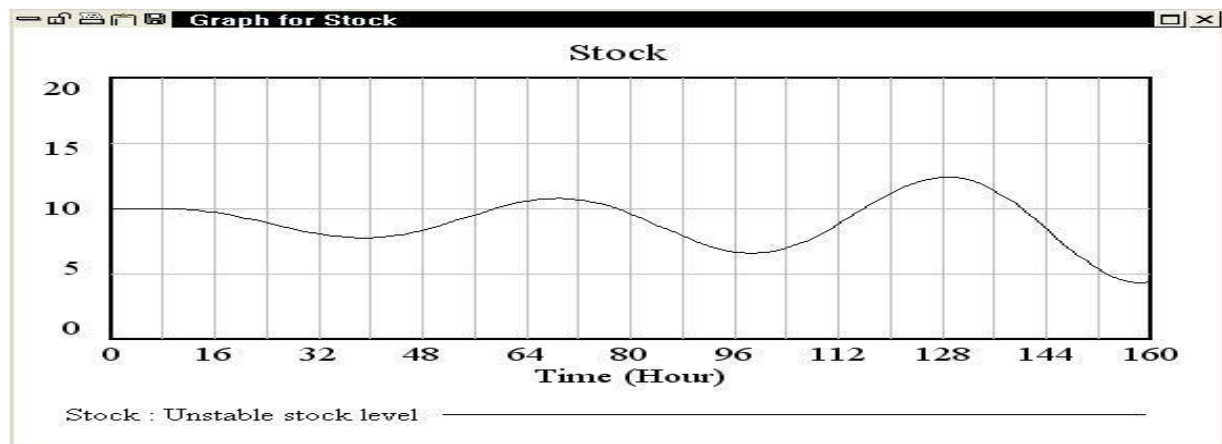


Figure 2. Unstable oscillations of the stock(source: own results)

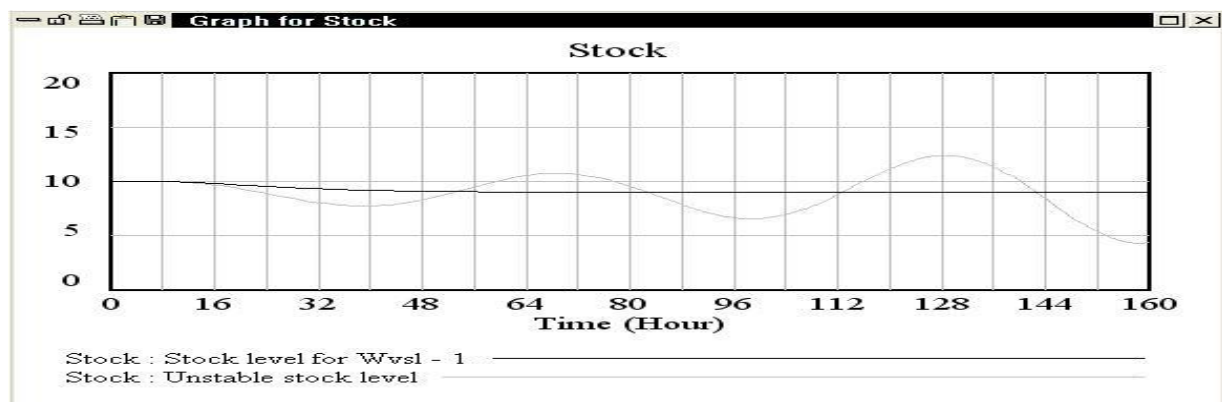


Figure 3. Compare of unstable stock level and stock level with stetted Wvsl to 1(source: own results).

The behavior of our model changes when the value of  $W_{vsl}$  is set to 1 because during simulation the information delay is fully taken into account. The question is: can the management of stock level be further improved by changing the value of  $W_{vsl}$ , and if the answer is yes then what's the optimum value?

Vensim has a specific tool for optimization:

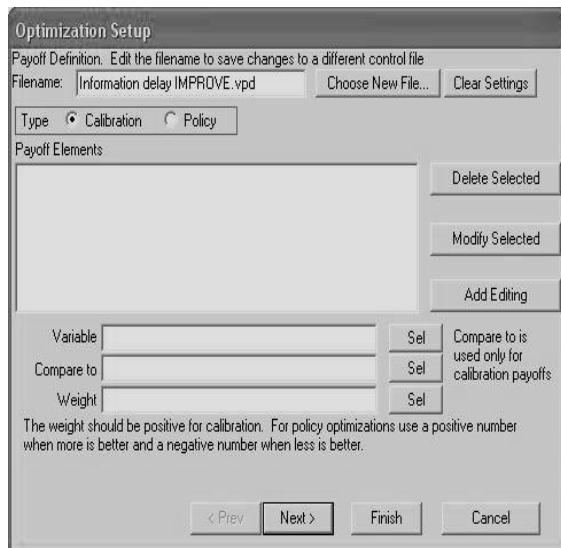


Figure 4.

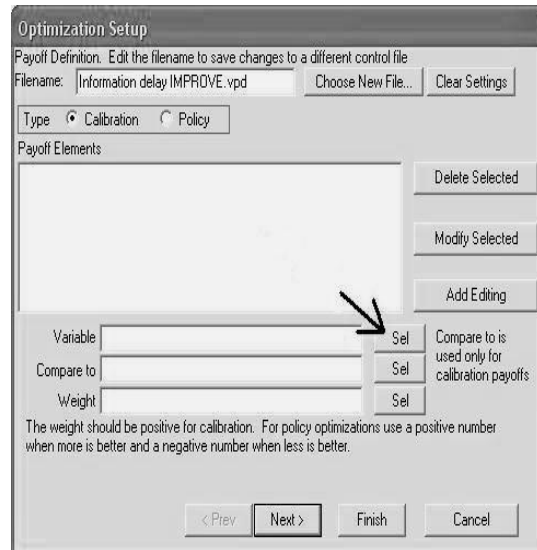


Figure 5.

To answer our research question we have chosen the calibration type.

First step is to determine payoff elements. For that we click „Sel” button situated next to „Variable” box.

A new window appears and we select the „Stock” variable then click „ok”.

After that, we set the „Weight” to 1 and click button „Add Editing”.



Figure 6.

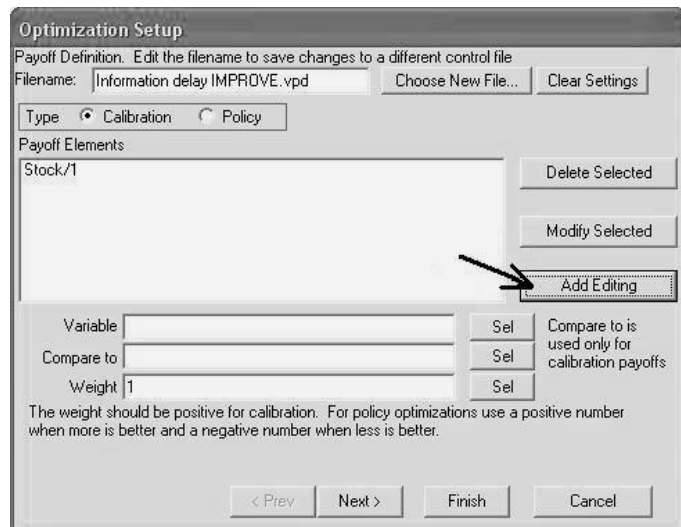


Figure 7.



Afterwards by clicking „Next” the following window shows the detailed parameters of optimization ( see Vensim help pages ... etc). Vensim contains standard values for those parameters which are appropriate in our particular case. One important thing is the selection of constants for optimization process. We click „Select constant” button and choose from showing up window „Weight of virtual supply line” parameter and click ok.

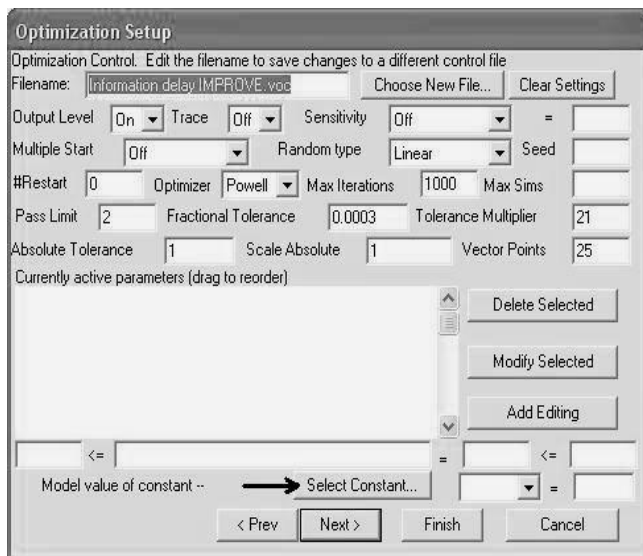


Figure 8.

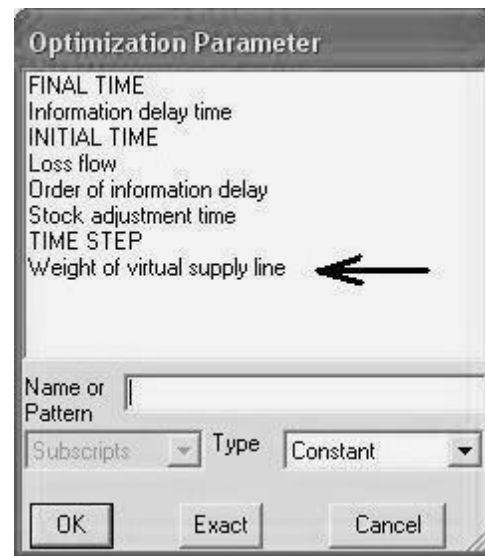


Figure 9.

Now we pick max and min boundaries for our parameter and click „Add Editing”.

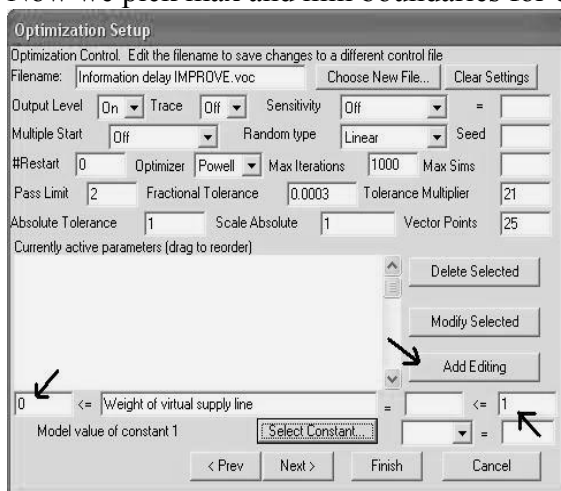


Figure 10.

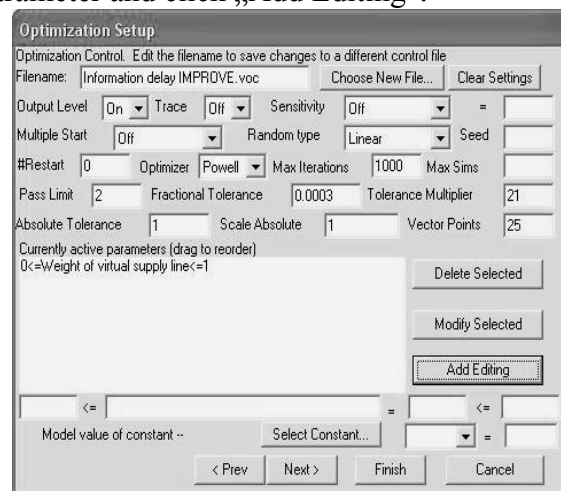


Figure 11.



As shown we have one active parameter. By clicking next the final window appears.

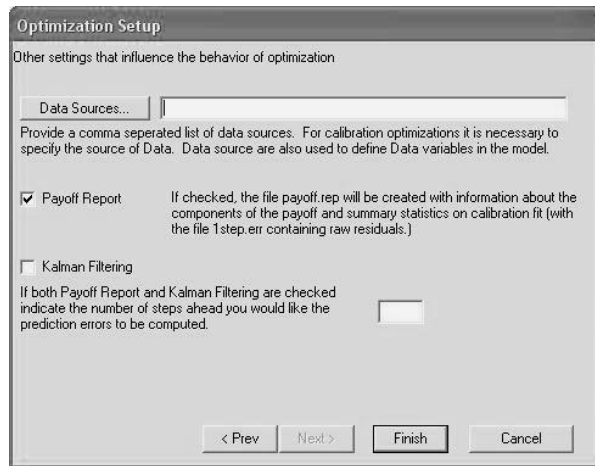


Figure 12.

Here the „Data sources” are chosen. For the purpose of finding optimum value the authors considered many cases. The problem can be referred to finding the best management of stock level by comparing it to the constant stock level dataset (Figure 3). Making use of try and errors method our research resulted in finding such dataset. Finally by providing this data as data source for Vensim and clicking „Finish” button the optimization process starts.

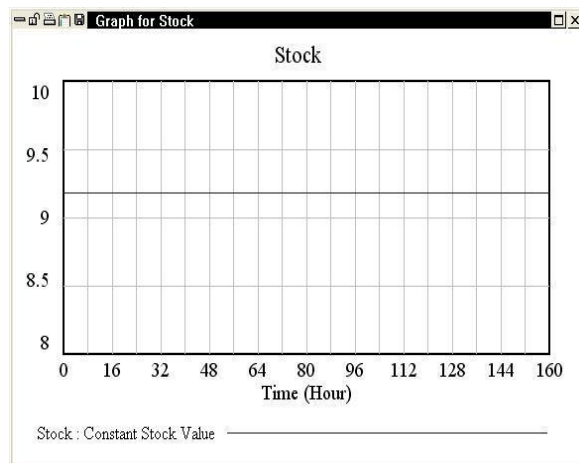


Figure 13.

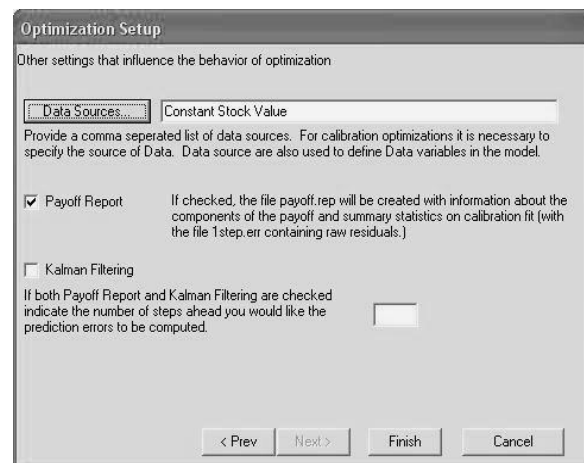


Figure 14.

The outcome is presented beneath:



Figure 15.

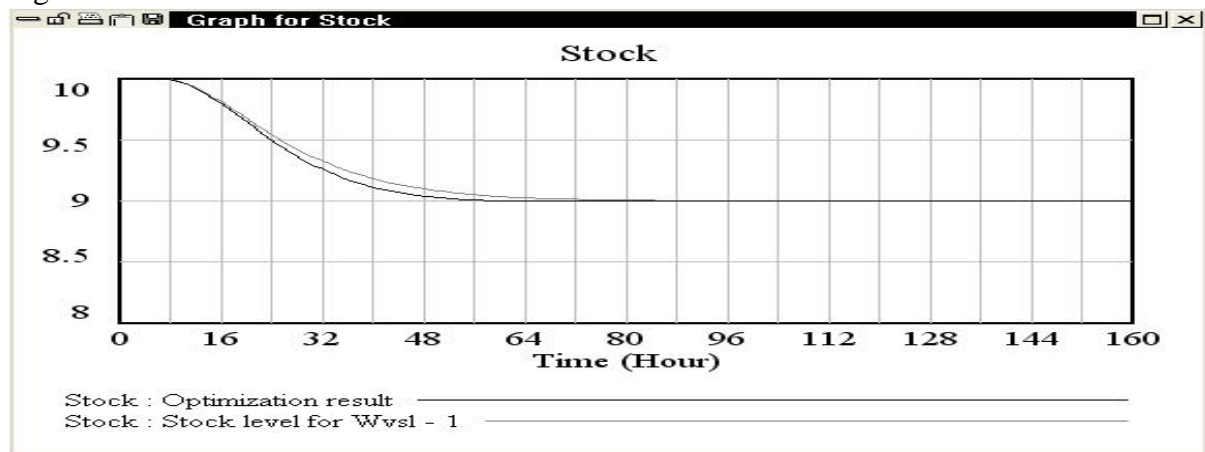


Figure 16.

### 3. Conclusions

We have shown that the answer to our previous question is positive – by proper change of the value Wvsl we obtained a quicker and stable stock level reduction to desirable level. This was obtained by taking advantage of Vensim functionality and authors thorough research. Calibration method involves finding the values of model constants that make the model generate behavior curves that best fit the given dataset.

One thing worth noting is the fact that the stock reduction lowest time isn't the only problem. The smoothness of the curve is important as well because imagine the situation that we change the desirable stock value from 10 to 0 – in this case the possibility of quicker change with even a small oscillation beneath the desired level isn't a proper option. In our research we've taken this issue into consideration so that stock level reduction from 10 to 9 is bounded between 10 and 9 with small reasonable approximation up to two places after decimal point.

The found optimal value 0.859149 is interesting from another point of view. Dealing with information delay is an important task but the quickest results are found when the delay isn't fully taken into account but in about 86%.

#### 4. Theoretical and managerial implications.

Nowadays many companies have departments scattered over vast areas in many countries. The movement of goods is determined on the quality of communication between them. Those problems are the issues of research for many scientists. Many solutions including proper algorithms were discovered and so logistic was born in the form as we know today. What the authors are trying to do is to show that existing solutions can be further improved to fit particular cases. It's obvious that every company producing some products has a storage and a proper system applied to manage the flow of information and goods. So our research question transferred to the real world can be translated to the form : can the management of stock level in my storage be further improved by readjusting the handling of information delays in my particular company? Vensim is a tool which can be used to create a virtual model of the management system used in real company. As we all know research on a model in computer is cheaper than the research made on a system that's working in the reality. We've shown in our model that dealing with information processing delay in about 86% in chosen situation produced better results than taking it fully into account. In other words, we've managed to reduce the quantity of goods in storage for example from 10 thousand pieces to 9 thousand addressing only 86% of information passing issues, and it happened to be quicker than when we took 100% issues into account. Since time is money as well as lower costs of dealing with information processing throughout company in 86% the conclusion is formed that we saved some money. Simulating the workings of the company in Vensim virtual model is comparable to training a pilot in plane simulator - it can generate a profit without the risk of accidents.

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## **THE INTERNET – A MEDIUM TO PROMOTE HUMAN RIGHTS**

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### **ABSTRACT**

Content: The Internet is considered to be a free medium, and it therefore theorists called "democratic media" because the approach does not have the time, geographic, racial, sexual, political or other restrictions. In most countries there is still no legislation that limits the activity through the media, and it is freely used in different purposes. This paper provides an overview of the events that this broad area - acting through the Internet, used to promote European values and universal human culture and human rights.

*Key words: Internet, social networks, Facebook, Twitter, blog, European Union, Apple, ACTA, human rights*

### **INTRODUCTION**

The Internet as the most often free and the medium accessible to everyone, is uniquely suited not only for informing, communication, review, downloading of different contents, but as well, as any other medium of communication, for spreading the ideas, thoughts and attitudes, and in that way, for influence on the forming of the public opinion. There are different studies and analysis about this common and huge phenomenon, but this paper will offer the illustration of example how the ideas of free thought and expression and principles of civil and political rights are represented through the Internet.

### **CONCEPT AND RIGHTS ON FREE EXPRESSION AND THOUGHT**

The idea of free thought and expression permeates throughout history of modern civilization. From the ancient Greece, Roman Empire, Middle Ages and Renaissance, to the modern Constitution of the great countries and Declarations.

In 1946. year, The General Assembly of the United Nations enacted the Resolution, which by its first article said that the freedom of informing was the fundamental human right and „touchstone“ of all other freedoms.

„Universal Declaration on Human Rights“ was enacted in 1948. and it by its article 19, for the first time defines the freedom of opinion and expression and classifies them to the fundamental human rights. So the freedom to hold opinion without interference and to seek, receive and impart information and ideas through any media, end regardless of frontiers, and later either orally, in writing or in print, in the form of art, or through any other media of his choice, becomes official in all countries of the world.

Later adopted acts, Conventions and Laws confirm this idea and define it in detail.

With technological development and emergence of printed, and later electronic media, the idea of freedom to express opinion just getting new forms. The codes of professional ethics and the legislation of each country individually regulates this area.

With development of electronic media, creation and spreading the Internet functioning, as more and more present medium, in our everyday life, humanity is for the first time faces the media which develops faster than administration (the law) can define it.

Right now, most European countries don't have the law which defines just this area. General legal acts and individual actions are the subject of responsibility, but the law about the Internet or similar, still has not entered into force.

## **HUMAN RIGHTS AND THE INTERNET**

The International Covenant on Civil and Political Rights defines seven substantive rights of each individual:

1. Right to live
2. Freedom from torture and other ferocious, inhuman or degrading treatment or punishment
3. Freedom from slavery or serfdom
4. Prohibition on debt bondage
5. Principle of legality
6. Right to legal personality
7. Freedom of thought, conscience and religion

The Internet as more and more present medium, with great number of users and great choice of possibilities is suited for advocacy of these ideas as well.

The internet through the social media, applications, can give voice to different people worldwide. The Internet is becoming the means for promotion of democratic changes, rising of consciousness about fundamental human questions and in that way allow to the people to approach to the realization of their fundamental freedoms.

## **III THE PREMISE IN VIRTUAL WORLD IS FREEDOM**

The open and accessible Internet can allow free expression and wide range of other human rights – but, in the same time, some people are facing the great problems from this area and send their voice to the virtual world claiming there are no such thing as respecting of these rights, and witness about examples with repressive governments. Both use the same technologies, the same medium, the Internet, for the repression and undermining as well as for the spreading and promotion of the same ideas.

The Internet must be free, but this freedom of expression must be handled with care, because great number of possibilities which are offered on the Internet imply with itself additional



obligations which must be accepted by all – governments, individuals and companies which offer social media platforms.

## **INDIVIDUAL – GOVERNMENT – INTERNET**

Great number of countries respect this right to freedom, but some of them are particularly ahead in promoting these values, especially through electronic media. Sweden, Netherlands, United States of America especially point out human rights and freedom of expression as their values and norms. Some governments promote human freedoms in cyber space as well.

Certain politicians even point out following: „There are no such thing as economical Internet or social Internet or political Internet. There is just Internet.“ We would like to add this as well, the Internet as one and the only, and the right to Internet access is equal for all of us.

The goal of the country is to recognize the Internet access as human right – not with the purpose to spread its number of rights, but as the right of individual to search, receive and spread information, and realize its right to freedom of expression.

Great number of governments want to exclude this right, referring to cultural differences, political imperatives of the state, and anxiety for common, national and individual security. The examples of these measures are certain African countries and China, of course. China has invested huge amounts of money in building of „Great Firewall“, by which government controls data flow and filtrates contents it doesn't like.

However, there is always solution. Individual can take a risk to overcome these barriers, but in a case when such attempt is identified, he can bear catastrophic consequences.

Bloggers and other Internet activists are in that case criminalized and their work is defined as liable to punishment and very risky.

A trend that have been noticed is that providers cooperate with governments, allow monitoring, and in that way help to the governments to fight against dissidents and contravene their rights.

## **DAY OF SOCIAL MEDIA AND HUMAN RIGHTS – 10<sup>TH</sup> OF DECEMBER**

In this 2011. year, Human Rights Day marked the work of all human rights defenders and focused on their efforts to induce changes through the social media.

The United Nations Office for human rights launched global social media campaign which would inspire the people to commit themselves to undertake measures to make necessary changes which would become defenders of human rights.



Picture 1. Logo that marked Human Rights Day in 2011.



*Picture 2. The gathering under the name: „The Human Voice of Freedom: The Internet and Human Rights“, the UN Human Rights Council, December 2011.*

Large number of events marked 2011. year, when human rights were promoted through the social media and applications. Some of the applications gave a voice to the people worldwide, while also making a difference to the promotion of human rights, raising of the consciousness about the human rights issues and allowing to the people to approach to the realization of their fundamental freedoms. This day is marked in the centers like Geneva and New York, on 9<sup>th</sup> of December by presentation of the work of the human rights defenders and analyzed role of the social media as the key element in modern political and social changes.

International Human Rights Day was marked by The United Nations on 10<sup>th</sup> of December in such a way the UN on its Facebook page, where they present the human rights values, analyzed influence of the social media, through political, cultural and social events, in individual communities, but on national and international level as well.

One in a series of these events was also the gathering under the name „The Human Voice of Freedom: The Internet and Human Rights“ which was held on June in 2011. in the UN Human Rights Council.

Seven activists, the Internet bloggers, page administrators on the social networks and highly regarded experts from the social media field, discussed their work in the protection of human rights area through social media and significance of a free Internet in promotion of human rights and freedom of expression.

They used their blogs, Twitter and Facebook accounts to inform and encourage people in difficult situations and environments. There are great threats for such activism, as well as dangers to secure the Internet, as a medium open for everyone, and that new technologies undermine individual rights.

The Internet activists which become organizers of social protests in relation to the issue of respect for fundamental human rights, often get support and help from different technological companies which by its product helping the activists to make their voices to be heard.

## NEW TECHNOLOGY AND HUMAN RIGHTS

The University of Essex organized the Institute for Democracy and Conflict Resolution in London. This Institute conducts researches in the area of a fight against the violation of human rights.

In the last time, the main subject of the projects of the Institute for Democracy and Conflict Resolution in London is the use of new technologies and education from this area.



Picture 3. Home Page of the web site „FrontlineSMS“

The Internet access and the social activity through this media which often can be sanctioned, whether from technical or other reasons, represented the cause for creating of new applications which contribute to the solution of this problem.

Lack of internet signal can be one of the main problems for the theme for human rights promotion over this medium. Of course, ideas and new modern technologies can compensate this problem.

## The example for that is also application Frontline SMS

Ken Banks is the founder of Frontline SMS application, namely, the tool which allows people that by using their cell phones for SMS messages quickly communicate with many people even through other signals. Over this service on cell phone, by connecting with laptop, you have secure connection with Internet. This service requires cell phone and a basic laptop to run, which is the basic for launching, and in that case geographical location of the individual becomes

irrelevant. The slogan on the Frontline SMS website is „using mobile technology to promote positive social change“.

The website „HARASSmap“ uses the help of FrontlineSMS. The purpose of this site is to monitor and map mistreatment in Egypt. The HARASSmap was co-founded by Rebecca Chiao who used to live in Egypt. She has been working in the area of sexual harassment for seven years. For Rebecca, the main purpose of the HARASSmap is to change attitudes toward sexual harassment in the daily life of Egyptian women.



**Picture 4.** Photography from the website „HARASSmap“

		Media Richness	
		Low	High
Self Disclosure	High	Facebook	Collective Blogs
	Low	Twitter	Nawaat

**Picture 5.** Table with relation between influences of certain social networks and applications

The idea is that individual will never participate in the protest, if he considers his personal risk is much greater than collective interest of the protest, that is to say, democracy.

Social media played the key role in motivation of great number of people to go out in the streets. The pictures are recognized as the motivators which define individual opinion that it is safe to go somewhere and participate, for example, to a meeting where thousands of people can be present, then other people will think it is relatively safe to join the protests.

Dr Anita Breuer analyzed and explained in which way relation of self-revelation in the media richness determined when certain activity would be undertaken. More precisely, which network, application or similar instills greater or lesser trust in individuals. The same information on different networks has different value of perception and later trust of citizens.

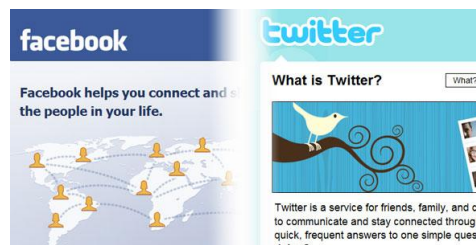
The Table shows relation between high and low trust, that is to say, how individual responds on the information received through Facebook, Twitter, certain blogs or, for example, through the website Nawaat (independent open blog of the Tunisian, who deals with civil activism).

The conclusion which can be given is that the collective blogs have low risk level.

The Facebook is not only risky, but is considered to present a lower quality of content, in the sense of media richness, and in that way the possibility to be manipulated. There are too many unqualified people who give their opinion on Facebook, and verification of the facts is impossible from time to time.

The Twitter is relatively safe to use (especially if you set up as default webmail address exclusively for your social media activities – something that all of you should really consider, and not just activists and protestants.)

First precondition for functioning of these media in the space where it is the most necessary is the problem of illiteracy. Many of the most endangered people simply are not in the situation to participate in the social media in this moment.



Picture 6. Home Page of the website „Facebook“ and „Twitter“

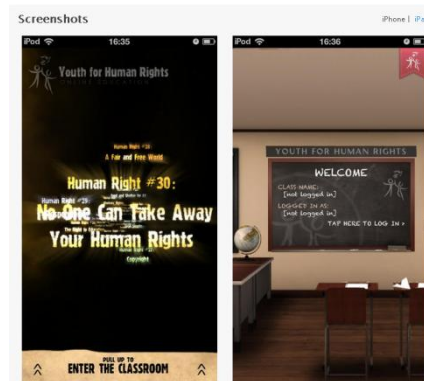
Maybe this was one of the conditions for appearance of the Google application by which you can send message on Twitter by your own voice. Now everyone can „tweet“, simply one leaves the voice message on one of the international telephone numbers and the service is going to tweet the message immediately. In this case, the Internet connection is not necessary. People can listen the messages by dialing the same phone numbers or they will visit specific Internet page to do that.

For each message over social media there is a person, recipient.

The biggest challenge is not that much in promoting the use of social media, but in understanding how the message will arrive to the right recipient, in the ocean of noise and great number of information.

### **YOUTH FOR HUMAN RIGHTS ONLINE EDUCATION BY UNITED FOR HUMAN RIGHTS INTERNATIONAL**

The company Apple has the application by which it promotes and try to educate young people about human rights. This application is dedicated to the young people from the elementary school, high school and the students as well. Authors of application had an idea to use it as educational means, whether as a part of subject teaching (with the teacher) or individual learning. The application has short documentary about human rights, as well as the brochures (pages) about human rights.



Picture 7. Application “Human Right”

## UNITED NATIONS MOBILE APPLICATIONS

It is necessary within the scope of these applications and programs to mention also official page of the United Nations (<http://www.un.org/digital>) by which installation on the cell phone or tablet the individuals worldwide can be always informed on the promotion, but also about endangerness of human rights on different territories.

This application can be considered as more important than others because it represents the official one so the data in it are accurate and without any censorship.

## ACTA

One of the threats for privacy and free access to the information, generally speaking, but especially on the Internet, is ACTA – The Anti-Counterfeiting Trade Agreement (multinational treaty for the purpose of international standards for intellectual property rights enforcement). The official goal of this agreement is sharpening of the fight for the respect of intellectual property, as well as for the repression of the internet piracy and counterfeit of any type. The agreement was signed on 01. 10. 2011. between USA, Japan, Canada, Morocco, New Zealand, Singapore and South Korea, and at the beginning of 2012. there were 22 countries which are the members of the EU joined them as well. The Agreement should have been considered in June by the European Parliament, and then ratified in the National Parliament of the signatory countries. However, coming into force and ratification of the Agreement is not an easy process. The last news is that the European Union suspended ratification of The Multinational Anti-Counterfeiting Trade Agreement (ACTA) and submitted the document to the European Court of Justice with purpose to assess possible violation of civil rights. The European Commission has decided to ask the opinion of the Supreme European Court „in order to assess whether ACTA or its implementation is in accordance with fundamental rights and freedoms of European Union, such as freedom of expression, information and protections of personal information.“.





Picture 7. Photography from demonstrations against ACTA Agreement in Berlin: the illustration of struggle for freedom of speech and expression, as one of the fundamental human rights.

After signing the treaty, a few leaders of EU apologized to the citizens because they didn't research the agreement more carefully before its signing. Poland, Bulgaria and Slovenia withdrew their support to the controversial treaty. Germany, Netherlands, Czech, Slovakia and Slovenia gave up from joining ACTA, first of all, because of mass protests, but as well because of the expert's opinion in relation to intellectual property about ACTA provisions which are contrary to the EU law and European standards for protection of human rights.

As all other international treaties, ACTA has to be interpreted in accordance to Vienna Convention form 1969. The Article 32. says that treaty, if there is any ambiguity, must be interpreted in accordance to the documentation used during its composing. However, the documentation which was used while ACTA was composed is secret and never available publicly. Those who are experts in this area assert that such mysterious agreement has never been published before.

The human rights which are violated the most in ACTA are: Right to privacy, freedom of expression, right to health care (access to medical services) and right to a fair trial.

## **VIRTUAL AND REAL FIGHT AROUND ACTA AGREEMENT**

On 11<sup>th</sup> of February, the citizens in over 200 European cities participated in synchronized protest claiming that ACTA violated their rights.

The National Intellectual Property Institute in Serbia didn't receive invitation for our country to participate in negotiations around ACTA agreement, because we are not member of World Trade Organization whose members have accepted controversial treaty. Serbia will have to do that till the end of this year if our country becomes a member in this organization. There is also the Stabilization and Association Agreement, which obliged us to get our legislation in accordance to the EU regulations. All this would be contrary to the Constitution of the Republic of Serbia, which in the Article 41, guarantees confidentiality of letters and other means of communication.

The European Court for Human Rights in Strasbourg, with the main duty to implement European Convention on human rights, assessed that operator of certain social network must not be forced to introduce common system to filtrate the contents for all users in order to prevent unlawful exchange of musical and audiovisual materials. The Court by that act confirmed its previous decision from November 2011, when it assessed that setting of the filter and blocks on the



Internet with the aim to protect intellectual property was contrary to the European law. New decision of this Court makes strong impact on those who support introducing the common filtration of contents on the Internet. The Court assessed that filtration of the contents violated the fundamental human rights of European citizens.



Picture 8. Photography from demonstration against ACTA agreement in Berlin: The illustration of struggle for freedom of speech and expression, as one of the fundamental human rights and freedom of Internet as a media to promote these rights

Michael Gardener, expert in the issue of intellectual property, says that although the European Court in its verdict refused the idea that the website operators for social networking and providers can be forced to introduce complete monitoring and filtrating of piracy at their own costs, the verdict doesn't prevent the copyright owners to ask limited prohibition against the websites for social networking or provider, but in proportional form and effect.

There is also very well known case of the Belgian company who represents the interests of composers and copyright owners, Sabam, which in 2004. year, has confirmed that users of social network Netlog downloaded the content without permission and payment for the copyright. The social network Netlog, the ownership of Belgian company Massive Media from Genk, has over 95 millions of users all over Europe.

On the Sabam's request, the Belgian Court ordered to that social network to disable downloading of the content protected by copyright. That company also asked from the Belgian Court for the Netlog to pay 1.000 Euro penalty for every day of non-fulfillment of the verdict.

However, Netlog made a complaint, and the Court of Appeal in Brussels then addressed the European Court of Justice in Luxembourg. Netlog says that Sabam actually requests filtrating of its content and monitoring the activities of all users, which is contrary to the EU Electronic Commerce Directive.

The European Court alleged that, by monitoring of all electronic communications of all users of social network Netlog, their rights would be violated, but the EU rights as well. Apart from that, the measure could also „limit the freedom of sending and receiving information, since the system might not be able to always distinguish between unlawful and lawful content, which would lead to lawful communication being blocked unnecessarily, “ says the verdict of European Court of Justice.

# NETLOG™

Picture 9. Home Page of the website Netlog

The Court referred to establishing „a fair balance“ between the right to intellectual property, from one side, and the right to protection of the personal information and freedom of exchange of information, on the other side.

This verdict could influence the other similar cases all over EU.

### **CONCLUSION**

The Internet as a modern and more and more common medium of communication is also suited for promotion of ideas, attitudes, and in that way, for the forming of public opinion. Great number of people different in their geographical, political, religious and other affiliation, are users of this medium. They, above all, become the receivers of messages they getting through different social media (Facebook, Twitter, blog and other social applications). By spreading of this networks, so the influence of the idea on respecting the human rights increases as well, which the authors and administrators of this pages promote.

Of course, the author and intellectual copyrights should be protected, but not with degrading or complete neglecting of fundamental human rights. So, each country should restrain from interference with private life of citizens and take care of guaranteed human rights.

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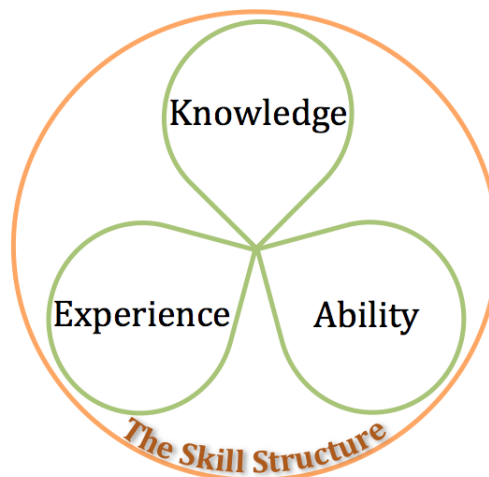
**ACQUIRING AND ENHANCING RESEARCH SKILLS: THE PROFESSOR-  
DOCTORAL CANDIDATE PERSPECTIVE**

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**Extended Abstract**

One of the key fundamental cornerstones of Philosophy Doctorate (Ph.D.) programs is to provide the graduate with the appropriate skills to conduct research on their own. As Ph.D. programs have been evolving over the past three decades to include hybrid (on-campus & online) or even fully online programs, such programs attracts more and more working professionals. These working professionals primarily wishes to advance their understanding deeper, seek a Ph.D. to obtain an academic position, or need such degree to pursue higher positions even within their own organizations. While these working professionals have significant skills in the Information Systems (IS) field, however, they have limited skills when it comes to conducting research. Figure 1 highlights the three integral components of a generic skill. For the purpose of the discussion, we will extend the definition of skill found in literature (Boyatzis & Kolb, 1991, 1995; Levy, 2005) to define *research skills* as the combination of knowledge, experience, and ability to conduct research well. Table 1 outlines the 10 critical research skills that a Ph.D. candidate must master upon finishing their doctoral dissertation study and graduation.



**Figure 1: The Skill Structure**

**Table 1.** The Research Skills Expected from Ph.D. Graduate

No.	Research Skills Description	Source
1.	Knowledge, experience, and ability to conduct effective literature review	(Levy & Ellis, 2006)
2.	Knowledge, experience, and ability to identify as well as justify a viable research-worthy problem	(Ellis & Levy, 2008)
3.	Knowledge, experience, and ability to identify as well as justify the research questions and/or hypotheses	(Mertler & Vannatta, 2013)
4.	Knowledge, experience, and ability to Identifying as well as justify the specific research measures	(Mertler & Vannatta, 2013)
5.	Knowledge, experience, and ability to identifying as well as justify the appropriate research methodology	(Ellis & Levy, 2009)
6.	Knowledge, experience, and ability to obtain Institutional Review Board (IRB) approval	(Wang, n.d.)
7.	Knowledge, experience, and ability to conduct data collection	(Terrell, 2012)
8.	Knowledge, experience, and ability to perform data analyses using computerized statistical tools	(Mertler & Vannatta, 2013; Terrell, 2012)
9.	Knowledge, experience, and ability to interpret the statistical results as well as draw conclusions from the interpretation of the statistical results	(Mertler & Vannatta, 2013; Terrell, 2012)
10.	Knowledge, experience, and ability to communicate research	(Gray & Drew, 2012)

While one of the main outcomes of any Ph.D. program is to ensure the appropriate level of research skills for its graduates, working professionals are having difficulties acquiring and enhancing these skills. Many of these working professionals, who have at least one masters degree or even more, come into the Ph.D. program with the notion that taking few courses and conducting a “research project” as they used to do in their graduate school, is what required to complete their Ph.D. dissertation. These working professionals have to face two critical facts: a) time investments, and b) humbleness, which without it obtaining or enhancing the 10 critical research skills is impossible.

**Time Investments:** The journey of obtaining these 10 critical research skills cannot be taken lightly. Obtaining and enhancing the 10 research skills outlined above require significant time investments. One nice analogy to learning these critical research skills that can well illustrate the challenges these working professionals face is taking an individual who has been used to driving

an automatic compact car in the United States (US), and asking them to drive a manual shift, 18-wheeler tractor-trailer in the United Kingdom (UK). While one might have good *knowledge*, *experience*, and *ability* to drive a compact car on the right side of the road using automatic transmission, when it comes to driving a manual shift 18-wheeler tractor-trailer on the left side of the road poses a significant challenge. While such task is doable, in order to demonstrate competency in that skill, one must ensure to take the journey seriously by investing significant time to acquire and enhance the skills. While some candidates may have better skills than others, in general their research skills are not proficient, certainly not all 10 critical research skills. To mitigate this deficiency, the doctoral candidate must dedicate time to continually improve their research skills. For example, many doctoral candidates are underestimating the time needed to find the right literature, synthesize the literature, understand the research theories, research methodologies, statistical tools, and data analyses. Moreover, many doctoral candidates underestimate the time needed to obtain Institutional Review Board (IRB) approval. While IRB has been developed in the US and treated very seriously in all research institutions, many other countries around the world include similar program to ensure credibility of research along with protection of participants. Most doctoral candidates are unaware of the training they will need to do before they can submit their IRB protocol for evaluation. They must devote time to understand the IRB requirements, obtain IRB training completion certificate, and ensure their proposed research protocol is in accordance with the IRB requirements.

**Humbleness:** Beyond the time needed, a significant part of acquiring and/or enhancing the 10 critical research skills require apprenticeship. One of the key issues that play against working professionals coming into a Ph.D. program is their thinking that they are experts in their field. However, while one might have significant competency level on skills as a practitioner within a certain field, but when it comes to research, a totally different skillset is needed. As such, doctoral candidates that are working professionals may find it hard to be humble during the research apprenticeship process, which may cause significant consequences on their ability to complete the program. For example, most of the originally identified “research” problems proposed by working professional candidates may not be research-worthy at all, rather ideas for consulting jobs. In order to ensure that their proposed idea is matched with a correct research-worthy problem, they have to humble themselves, while following the direction and guidance of their dissertation advisor/chair. While arguing with a professional posture and providing evidences to support disagreements are very fruitful in the research design debate, the process of doing it from the doctoral candidate perspective should be as a student learning to drive the 18-wheeler tractor-trailer on the left side of the road. Such debate and professional disagreements can be done in a humble approach, remembering that their dissertation advisor/chair has a driver license and years of experience driving the 18-wheeler tractor-trailer on the left side of the road!

In summary, some of the most difficult challenges for working professional doctoral candidates are to understand how to manage work, school, family, and friends simultaneously. All of these can sometimes be unpredictable, but the doctoral candidate must consciously think about how to appropriately manage to stay on track with their Ph.D. Program. Next, acquire the 10 critical research skills in a humble way by embracing the dedicated apprenticeship of their dissertation advisor/chair. Moreover, devoting the time necessary to produce high quality research shouldn't

be taken lightly. Finally, understand how all of the aforementioned research skills build upon one another.

**Keywords:** Research skills, Philosophy Doctorate, working professionals, Information Systems

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**Business Intelligence as a modern IT supporting management of local government units**

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**Abstract**

The paper has been devoted to Business Intelligence seen as a modern information technology that can support local government units. It consists of five parts. After a short introduction into the subject, knowledge seen as a most valuable asset in the modern economy has been characterized. Part three consists of presentation of the local government units in Poland and information challenges standing in front of them. Part four consists of the characteristics of BI in the management of local government units. Brief conclusions end the paper.

**Keywords:** Business Intelligence, data warehouse, knowledge, local government units, business analysis

**Introduction**

In modern times we are considered the era of information and knowledge, and the economy is becoming more and more the knowledge-based one. After the agrarian era, industrial era, there was a post-industrial era, also called knowledge-based era. In the knowledge-based economy (KBE) is essential to the possession and use of the company adequate managerial knowledge, at the right time.

Knowledge is becoming one of the most valuable resources. From about 80 years of the twentieth century, we live in a time characterized by a rapid acceleration of civilization, which manifests itself, inter alia, in disseminating the use of IT not only in business practice, but also in everyday life man. This is made possible by advances in the field as computer manufacturing and telecommunications, as well as the appropriate software, and is primarily the result of increasing demands associated with growing market requirements, and hence the need to meet these requirements. It is necessary to keep up in an increasingly competitive market. Meeting the demand for information and knowledge at the right time available to the decision maker who is able to take advantage of it is not an easy task to fulfill.

Effective management of public institutions is currently one of the biggest challenges that modern economy faces. Decision-makers of public sector entities have to meet growing expectations of citizens, entrepreneurs, officials, and employees. On the one hand managers of public institutions need to focus on “proper goal setting and results monitoring, financial management, defining standards of the services provided, taking advantage of benchmarking solutions, a proper management of human resources imposed by the concept of the new public management” [1], and directing these actions to meet the needs of citizens while making decision-making more efficient, supported by an intelligent IT solution, which allows to make

multidimensional business analyses to ensure comprehensiveness of solving a given business issue, on the other hand.

Business Intelligence as a very modern technology, using the latest innovations in the field of IT, seems to be the one that can provide the necessary information and knowledge.

Sources for the Business Intelligence technologies can be seen in two categories: internal – like databases, data files from the organization's assets and external – from internet. BI technology processes data from different data sources by OLAP analysis, data mining or reports. There are implemented such information systems as ERP, CRM, budgeting, financial analysis, sales analysis, marketing analysis, balanced scorecards, etc. in most local government units to support their everyday work. These systems or rather their databases are the data sources for the BI processes. That is why we can say that the BI technologies occupy the central place between management information systems in organization [5].

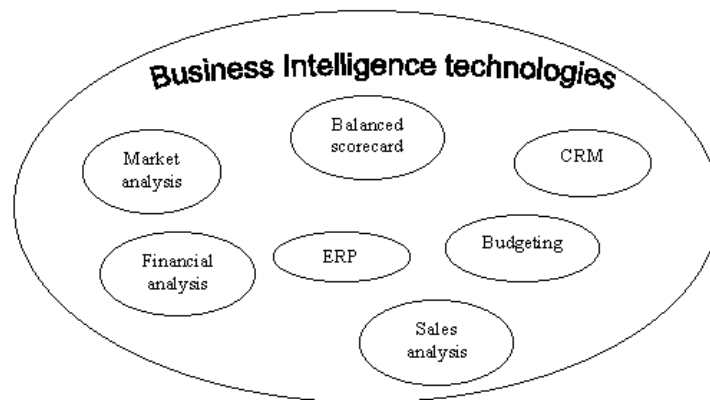


Fig. 1. Central place of the BI technologies among information systems supporting management

### **Knowledge as the most valuable asset in the knowledge-based economy era**

A new kind of economy that is knowledge-based economy should be seen in the context of the evolution of economic systems. This can be represented as in Figure 1. The knowledge-based economy is a new stage in the development of business entities and societies. The main asset of this development is the knowledge and information next to raw materials, capital and labor.

The OECD (the Organization for Economic Co-operation and Development) defines knowledge-based economy as the economy directly based on the production, distribution and use of knowledge and information. Knowledge is understood in this sense as a product and as a factor of economic growth. According to the World Bank's knowledge-based economy is based on six pillars [6].

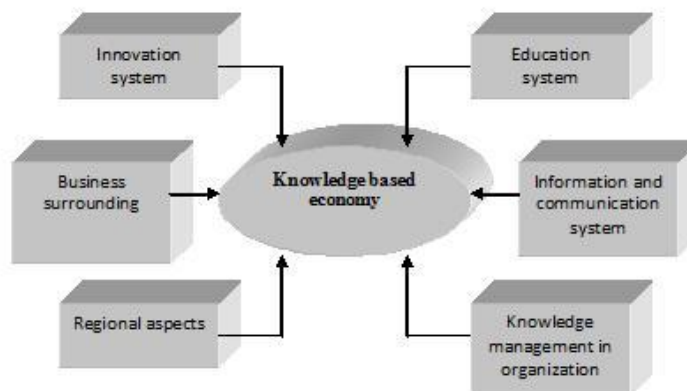


Figure 2. Basic pillars of the knowledge economy

Source: [6]

#### Innovation system

An innovation is the most important driving force behind the development of the economy, not only in Poland, but also worldwide. It is a peculiar form of the entrepreneurship, which is expressed in constant seeking new combinations of manufacturing factors for achieving and accumulating capital, and mainly of profit. Companies achieving success for new products, flexibly react to the changes happening on the market, as well as in all fields of their functioning enterprises are innovating.

The system of the innovation, i.e. the entirety of the action - from coming into existence of ideas for releasing finished products or services on the market as well as their improvements - should be appropriately designed and steered by the executive committee of every enterprise and also by employees of indirect rungs.

#### Education system

The education system is the most important, long-term factor in the development of society directed at the competition and the innovation. The modern educational system for future employees is an important factor affecting the development of the Knowledge Based Economy. It is important to raise the level of educated, creative people who are able to adapt quickly to changeable environmental conditions in Poland.

#### Information and Communication system

The information-communications system is creating the crucial infrastructure of the Knowledge Based Economy. By supporting processes associated with conditions of making available the knowledge to employees (locating, acquisition, creating, the transfer, using and the retention of the knowledge), it is possible to catalyze economic events. Information technologies are finding application both on the level of the economy, and on the level of individual organizations. Information technologies constitute the base for other subsystems of the Knowledge Based Economy. The effectiveness of the information-communications system for employees in

economic organizations depends on two main factors: the availability of the information-communications infrastructure and the ability of exploiting it.

#### Knowledge management in enterprises

In the Knowledge Based Economy we are watching appearing of a few types of processes associated with the knowledge: locating, acquisition, creating, the transfer, using and the retention of the knowledge. These processes are occurring both on the level of the total economy (in the macroeconomic scale), as well as on the level of individual organizations. On the macroeconomic level, we talk about the organizations based on the knowledge. Since the knowledge is a strategic resource for them, they are aspiring to possibly of the most effective management of it. If the majority of the organizations is managing consciously and competently the knowledge, we are saying that the economy is based on the knowledge. And so the forming of the Economy Based on the Knowledge should, above all, be held at the level of individual organizations.

#### Regional aspects of knowledge management

On the regional level, creating the Regional innovation system is a main instrument of the promotion of the Economy Based on the Knowledge. Regional aspects of the education policy of the state also in the moment of integration of Poland with the EU gained the special significance. Countries of the EU in the area of education are conducting the diversified internal policy. The accumulation of experiences associated with the functioning of the administrative-education system, is giving the base to formulate conclusions about local and regional conditioning and about action of acting about the character of legislative corrections as well as allows to take the innovative appropriate step. Achievements of regions are determined based on demographic, social, territorial, technological factors and on institutional indicators. Recommendations are being formulated based on the comparative analysis of the developmental potential of individual regions which are characterized by the resemblances and constitute the source of more late successes.

#### Institutional and business surroundings

Institutional-business surroundings have an indirect effect on the Economy Based on the Knowledge. It results from forces operating in a few dimensions so as, political, technical, economic, social, cultural, capital ones. An inflation, running costs and a money supply are affecting the economic dimension. Social and cultural dimension, connected directly with social values, determines what type of products and services will be accepted by consumers. In creating the Economy Based on the Knowledge very much a role of the capital market is also significant. The enterprise based on the knowledge is often a very difficult undertaking, functioning as part of the appropriate action about the increased risk. However, it seems that for such action acting power is enjoying considerable influence in the technological dimension. It is associated with new production and organizational techniques which the organization must implement and for which it must create the appropriate adaptation systems.

The transition to the era of knowledge may cause a social explosion due to the stratification of society and civilization and economic impairment.

Knowledge plays a dominant role in the information society. Knowledge can be located in different potential enterprise resources. They include also intellectual capital that is the sum of the knowledge possessed by the people making up the organization and intangible value indicating the total value of a company other than financial value and knowledge contained in databases collected for years in an enterprise. One of the definitions of intellectual capital gave T. Stewart [2]. According to him intellectual capital is the sum of patents, processes, people skills, technology, information about customers and suppliers, and experience.

One of the basic characteristics of the information society is the intensive use of knowledge, and hence the need to manage information and knowledge, as well as important is the quality and speed of flow between stakeholders. These elements are factors of competitiveness both in industry and services.

Managing a business requires efficient management of knowledge and human capital, which is treated as assets that are purchased, maintains, develops, evaluates and supervises.

If the organization is to be fully competitive in the global and local market, it should meet the following two conditions:

- ✓ Have appropriate knowledge,
- ✓ Be able to use this knowledge.

The knowledge contained in databases is a valuable resource that, to be useful, it must be mined. Databases were created in the past for completely different purposes than the acquisition of knowledge. There are many different operational databases in use. From Business Intelligence systems, capabilities are expected to provide information and knowledge directly from enterprise databases and also as a result of the processing on the basis of current and archival information resources from both companies as well as its environment.

Knowledge in the enterprise is a resource that influences on the position of an enterprise on the market as well as its development. The enterprise that possesses appropriate knowledge in appropriate time and uses it to undertake optimal decisions has a chance to achieve success being in front of its competitors or to increase purchasing of its products or services. The knowledge-based organization, learning organization is becoming more and more commonplace today.

### **Local government units towards the contemporary information challenges**

The local government unit is a local or regional local-governing community. These units are self-contained and autonomous in operation in the sphere of public affairs of local importance. They can differ in different countries. The characteristics below depict Poland.

These units conduct their business in their own name and on their own responsibility. This means that each of them, within its field of competence, it defines the objectives and their implementation, and for the execution of these tasks is responsible [7].

Managing a local government unit requires knowledge, which is treated as an asset that is collected, maintained, developed, assessed, and supervised. The knowledge collected in databases of local government units is a valuable resource that, in order to be useful, must be



extracted. Databases were created in the past for completely different purposes than collecting knowledge. Knowledge can be also in a tacit form (from personal sources). In a local government unit employees contact with each other in various ways: personally, by phone, fax, e-mail. It is essential to know where to look for the knowledge needed, who possesses it, in which documents, files, legal acts, monographs. Moreover, time spent on searching the needed knowledge in a given decisive situation is very important.

You have to possess the appropriate knowledge to be able to recognize or foresee the changes occurring in the environment or citizens' requirements towards local government units and quickly react towards these changes. The process of obtaining important and high-quality information, which will help managers in analyses, drawing conclusions, or making assumptions, is a process where using OLAP technology and data analysis, users are provided with sufficient answer to important business questions.

Implementation of dedicated IT solutions in local government units is now the foundation of implementing the Strategy for Sustainable Development in Poland. By following the idea of the common good, contemporary public institutions focus their attention on restoring the order and coherence of own activity that are one of the most important problems for a decision-maker of every institution. Attempts to achieve a future comprehensiveness in managing a public institution are determined by currently made investment decisions and modernizations. Acting in the era of knowledge (as well as information) forces organizations to manage this valuable resource in a special way because often the use of knowledge is a key for an organization to be or not to be on the market. As we live in the time when society is called as the information society and the economy heads towards being called as the knowledge-based economy, the use of intelligent IT systems has become a key to manage an organization. One should count efficiency and increasing the effectiveness in functioning of public entities. To meet new market requirements and adapt to trends, local government units aspire to become leaders in the administrative services sector not only by providing services adjusted to the needs of society, but above all by implementing new technologies that enable to manage the knowledge comprehensively, which allows to manage an institution efficiently [8].

The goal of modernizations that are being implemented is not only to achieve positive economic effects for a city, region or a country itself. These modernizations must prepare it to meet future needs of civilization that are generated nowadays by the society which is classified as the information society with the knowledge acting the key part. The knowledge can be located in various potential resources of local government units. Intellectual capital, which is a sum of knowledge of people who create an organization and a value that defines company's general value different than its financial value, as well as the knowledge from databases which have been collected for years in an institution can be counted as such resources.

### **Business Intelligence in the management of local government units**

Business Intelligence as an innovative technology that uses the most recent solutions in the scope of IT seems to be this particular technology which can provide necessary information and managerial knowledge. One could say that BI is an information technology used to



transform huge data volumes into the information which is then transformed into knowledge [6]. It is directed to decision-makers of various governing ranks (mainly strategic and tactical) or e.g. marketing or HR analysts.

The major objectives for designing Business Intelligence systems are as follows:

- Consolidation of data regarding the affairs of citizens, finances, local government units' ventures, etc.
- On-line access to pre-defined reports.
- Possibility to plan, simulate and predict.
- Instantaneous access to strategic data and business analyses.

Typical applications from the group of BI are such as:

- ✓ Strategic planning,
- ✓ CRM analyses,
- ✓ Controlling and management accounting,
- ✓ Profitability of products, services, etc.,
- ✓ Analysis of internal processes.

The requirements of BI systems can be formulated as follows:

- Integrating data from multiple sources into a single, basic and consistent data store.
- Providing a truly interactive data manipulation capabilities
- Offering multiple ways of presenting data (graphics, tables, standard and obtained an ad-hoc reports)
- Allowing the user to refill the application by the elements which are "extract" of his own intelligence
- Simple and intuitive to use
- Ensuring the functionality of the protective security and limiting access to data.

BI provides complete information - depending on demand - which is then used in the decision-making process, and this in turn is directly related to the tasks of the local government units. They can be divided into four groups such as:

- The tasks of the technical infrastructure of the municipality (roads, bridges, streets, sewage system, water, cleaning, garbage dumps, etc.)
- The tasks of social infrastructure (health, culture, education, physical education, social assistance),
- The tasks of security and public order (traffic, public order, fire protection, sanitary security, etc.)
- Tasks of spatial order and ecological (spatial planning, management areas, environmental protection).

Business Intelligence systems directed towards supporting economic processes that occur in a given public entity. However, storing the data alone, no matter how important in everyday work, is of no value on its own. One of the factors that allow gaining significant competitive advantage is information which can be obtained from data stored in systems used by the entire institution to make strategic and tactical decisions.

The whole Bi process begins when a business query coming from a manager has appeared and it ends when the response has been delivered to him in the required and understandable form (e.g. tables, charts)

The data used in the decision making process is not only the current operating data, it is also historical data, and they often come from different sources. These data come from a variety of heterogeneous database systems. The purpose of the data warehouse is their integration into one coherent data warehouse that provides the data to the desired business analysis.

A data warehouse is not a system that can be purchased "off the shelf". As it is to assist the implementation of strategic and tactical objectives of the organization, it must be designed with particular emphasis on the strategy of local government units. Managers and analysts are the main beneficiaries of the data warehouse and their needs have to be realized.

The most important attribute to the quality of the data warehouse is the credibility of information obtained through it. So the quality of data and the way they are placed in the data warehouse is one of the most serious challenges, and also it is the area that is often underestimated.

The basic features of DW can be summarized as follows [INMO02]:

- Subjectivity (the system is oriented towards the areas of the enterprise activity),
- Integrity (the system is supplied from a variety of heterogeneous data sources, and so the integration of heterogeneous data is necessary),
- To read-only (the user cannot change this data, and they are updated in batch mode at specific intervals. An inserted portion of the data item in the warehouse is unchanged),
- Variability in time (any information contained in the database of the DW system warehouse system possesses additionally a time dimension, e.g. a period of 5-10 years).

Data in the data warehouse can be used in three types of processing. They are multi-dimensional data analysis, data mining and reporting. The results are verified evaluated and presented as a report in the form convenient for the user.

In traditional HD it is enough to save only the facts, and relations between facts or processes in which the facts occurred, are not stored [KANI10].

When the source data 'go' to the data warehouse, that is to the dimension tables and the fact table, we can say that the warehouse has been created and now we can start on the multidimensional analysis providing answers to business questions.

BI supports the local government units in decision-making processes within such activities/tasks as:

- The technical infrastructure (concerning supervising and creating commune of roads, streets, squares, bridges, sewage system, water supply systems, keeping the purity, etc.),
- The social infrastructure (concerning the health care, the culture, the education, the physical culture and the welfare),
- The safety and the public order (carried out by a traffic system, public order, fire protection, health safety),
- The spatial order and ecological order (concerning the town-and-country planning, managements of areas and environmental protections).

## **Conclusions**

Ensuring order and consistency in the functioning of communes is now one of the most important problems faced by the authorities of each agglomeration. Attempts to achieve it are determined by the current investment decisions and done upgrades. That is why it is so important to make urban transformation included the use of information technology and communication systems operating in harmony and in favor of the environment and the development of sustainable city development based on knowledge. When planning the transformation of community infrastructures, we must take into account existing information systems and consider adding new functionality as it allows it to adapt to effectively use them. Taking into account the transformations of communes, information solutions might allow them to increase the economic benefits and reducing operating costs. Climate change, demographic change, population growth, urbanization, limited resources, the growing importance of information and the development of information technology, make the local government unit need to make changes in every area of its operation, from the integration of the autonomous functioning of ICT platforms, through effective management of energy resources, raw materials and waste management, to develop a dialogue with society, physical infrastructure changes ending.

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