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МЕТОДОЛОГИЧЕСКИЕ АСПЕКТЫ ПОНЯТИЙ „ТОРГОВАЯ МАРКА”, „БРЕНД”, „ГУДВИЛЛ” ...... Виктория Крикун
Dear followers of idea for sustainable development,

Dear readers,

Dear authors and friends,

You hold serial 26-th volume (number 2/2010) of scientific journal „Management and sustainable development”, published since 1999 from Faculty of Business Management at the University of Forestry, Sofia, Bulgaria.

In this volume you can find the integral text of the part of presented papers before the XII-th International Scientific Conference „Management and Sustainable Development”, held in Yundola in the period 19-21.03.2010. From received for participation 238 applications, with paper abstracts and posters in Conference took part 152 scientists, practical experts, post-graduate students from 32 universities from Bulgaria, 7 universities from Europe, 3 scientific institutes of Bulgarian Academy of Science, 2 colleges, experts from State Agency of Forests at Ministry Council, 4 NGO’s and 5 enterprises. In 1 plenary and 4 parallel thematic sections were presented 86 scientific papers and 17 posters.

The important issues of management and sustainable development in an EU accession context were discussed. Some main aspects could been summarized as follows: multifunctional forest management have to be developed and encouraged in Bulgarian forests, because of their high importance for environment improvement and biodiversity conservation, there are a high potential to encourage utilization of renewable energy sources, based on the forest biomass; contemporary practical and theoretical issues in human resources management; more attention have to be pointed out to the social aspects for sustainable management; presentation and implementation of the best practices and innovations; the practice for sustainable development shaping have to be reestablished; more attention have to be intended to the students and post-graduated students investigations; the more important issues have to be separated and have to be discussed into a suitable approach – for example, order of round tables, unformal discussions etc.; the all thematic fields have to be protected and the conference have to be approved as a forum for ideas exchange.

The Faculty of „Business Management” leadership and the Editorial Board of Scientific Journal „Management and Sustainable Development” have managed with the obligation to publish all presented before the Conference papers and posters, but in 3 volumes - 25, 26 and 27 (1/2010; 2/2010 and 3-4/2010) of the Journal. All papers and presentations could be find in the Internet site of the Conference and of the Scientific Journal „Management and Sustainable Development” (http://oldweb.itu.bg/msd/index.htm).

In the same time we offer of all of you not only to read published papers. You could send to our journal results of your investigations, ideas and papers on the issues of management and sustainable development.

Kind regards of all our readers!

Editorial board
SUSTAINABLE DEVELOPMENT: FROM MODEL EVOLUTION TO SYSTEM COEVOLUTION FOR A GLOBAL GREEN INFORMATION SYSTEM

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Abstract

The paper analyses the need for modelling sustainable development as a co-evolutionary complex system, integrating economic, social and ecological perspectives. It outlines the characteristics of such a model as: heterogeneity (difference in nature and aims in these perspectives); equality (need to holistically integrate different priorities) and human stewardship (the leading role of humanity in transforming, maintaining and/or sustaining the Earth’s complex system). The paper also addresses information issues arguing that purely cybernetic models cannot satisfy the requirements for modelling sustainable development, as they do not incorporate the required qualitative value-based assessment. Wide ranges of sustainability indicators are already being developed and applied for monitoring and reporting. However allowing full access to such information through a Global Green Information System (GGIS) can permit deliberative democracy processes to start implementing assessment and decision-making processes that align with humans’ responsibility as guardians of the planet Earth.

Key words: Deliberative democracy, indicators, information theory, modelling, sustainability

Introduction

According to Hasna [13], sustainability refers to a development of all aspects of human life affecting sustenance. The concept of “sustainability” has been associated with a wide range of human activities related to the use of resources (e.g. natural, human and financial), implying long-term continuity and ability to carry on with these activities indefinitely [15]. Described as “use-inspired basic research” [4], in the last 30 years we have witnessed the emergence of a new field of study in relation to sustainability that aims at addressing complex problems from a new holistic perspective. This new science is still in the process of defining and developing its analytic and scientific underpinning, approach, tools, objectives, aims and tasks [24]. Although there have already been numerous attempts at modelling the various aspects of sustainable development (e.g. [3, 6], the art of modelling is yet to deliver models that satisfy the whole range of issues related to the role of humankind as stewards of the planet Earth who are in a position to protect its natural environment for present and future generations [23].

The paper presents an argument for the modelling of sustainable development to be based on the concept of co-evolution and for the need of information-based global models that allow a time horizon span larger than a century in order for global intelligent systems to emerge. It also makes the point that full access to the information required for such models can only happen through a global green information system (GGIS) that could permit policy makers, researchers, industry and the wider community to start implementing assessment and decision-making processes that originate from deliberation and align with humans’ responsibility as guardians of the planet Earth.

1. Modelling sustainable development

By their nature, scientific models are a simplified representation of the reality but they also become themselves an object of study [7], thus allowing for new knowledge to emerge. The models developed in the field of sustainability studies cover the full range of categories, namely [23]:

- Pictorial visualisation models, such as the most popular Venn diagram with three overlapping circles representing the economic, social and environmental aspects of sustainability (see Figure 1);
- Quantitative models, including models instigating from econometrics, environmental sciences, physics, computer sciences, cybernetics and engineering;
- Physical models which are smaller or larger physical version mainly of the environmental aspects of the sustainability puzzle;
Conceptual models that link sustainability to deeper philosophical, ethical or other theoretical ideas, such as the „limits to growth“ paradigm or scenarios for the future; and

Standardising models, including indicators, benchmarks and targets.

Fig. 1. Sustainability Venn diagram

It is often the case that the modelling of a particular phenomenon or system is done through a combination of models from the above categories as each one of them serves a different purpose and/or a different audience. According to Boulanger and Bréchet [3], from a policy perspective sustainable development models should be able to: (1) adopt an interdisciplinary approach; (2) manage uncertainty; (3) provide a long-range or intergenerational point of view; (4) present a global and local perspective; and (5) involve stakeholders’ participation. It is yet to find a model or class of models that can satisfy all of the above criteria. A common weakness of models so far has been their focus on individual components, states, outcomes or aspirations related to sustainability with less attention paid on the processes themselves that are occurring within society, the economy and the natural environment and are generating global concerns for our future. Climate change is the most poignant example of this.

This is not to say that all the progress that has been achieved in modelling so far is unimportant. To the contrary, we have been able to devise some useful guiding tools and achieved enormous progress in developing computer power, networks and capabilities. However the nature of the sustainability challenge at the moment lies in understanding the processes that will generate a different way for humanity to relate to its hosting planet Earth and fully embrace its stewardship. The co-evolutionary paradigm offers a conceptual framework that can inform such a shift in knowledge, thinking and practice.

2. Co-evolution

In recent years co-evolution has attracted a lot of attention as a concept which is yet to develop its full heuristic potential. Originated as an exotic ontological idea about universal interconnectedness, nowadays co-evolution forms the methodological basis for knowledge generation in a wide array of areas – biology, languages or intelligent software [21]. According to Margulis and Sagan [14], it is an example of life developing through networking rather than fighting.

This interconnectivity and mutual adjustment is at the core of grasping sustainability (see Figure 2). A co-evolutionary approach implies the simultaneous self-development of humanity, economy and nature in their own individual trajectories (marked as ←) under the forces, which generate their development. The adjustments to the external forces are marked as ↑.

Understanding the co-evolution of nature, the economy and humanity requires considering the following important aspects:

- The co-evolving entities (i.e. the co-evolvents) are equally positioned in the evolution process. This implies that there is a need to balance and integrate all the value systems and decision-making that relate to environmental, social and economic priorities without compromising one for the other;

- The co-evolvents’ difference in nature makes them internally independent in the sense that each co-evolving entity is self-defined, has its own internal laws, rules and regulations that make it what it is and which are independent from the others’ internal laws, rules and regulations. The rules governing the economy are distinctively different to the ones influencing society and yet again very dissimilar to the ones describing the natural environment;

- The co-evolvents are externally dependent in the sense that each co-evolving entity can be informed and influenced by the others. In other words, changes
that are happening within the economy affect society and the environment; similarly environmental changes affect human society and the economy and most importantly changes in human behaviour can affect the economy and the planet’s natural environment.

Hence, the mutual interaction and influence between the three systems are the necessary and sufficient condition for co-evolution to occur. Any modelling or measuring of sustainable development needs to be able to grasp and reflect these co-evolutionary processes.

The following three characteristics, informed by the co-evolutionary paradigm, are important for modelling sustainable development: Heterogeneity, Equality and Human stewardship [21]. How to monitor and understand the co-evolutionary processes is discussed in the remainder of the paper.

3. Indicators and Information model

So far the practice of tracking development or progress towards sustainability has been through the use of sustainability indicators. According to Hart [12], “(a)n indicator is something that helps you understand where you are, which way you are going, and how far are you from where you want to be”. In this sense indicators perform a standardising function as they position progress in terms of the level of what is acceptable or desirable. They are also used for policy development and decision-making. There are numerous sets of comprehensive indicators (including those developed by the United Nations Commission for Sustainable Development and the Organisation for Economic Cooperation and Development) that are quite successful in describing individually the three sustainability areas (see Figure 1) in isolation.

What Hart and the International Network for Sustainability Indicators stress is the need for sustainability indicators to be different from the traditional economic, social and environmental well-being indicators, as they need to point to areas where the links between the economy, nature and humanity are poorly understood. This in fact is exactly where the impulses produced by the three components of the global system would cause collision and contradictions outside their individual trajectories (see Figure 2) resulting in changes in direction, speed and size of development or evolution. Hence co-evolution can only be understood in the context of the mutual interactions within the global system which become a joint process of evolution (or co-evolution). Any indicators measuring this process will rely on a proper understanding and modelling of these interactions.

Information theory (originating from applied mathematics) allows the modelling of information processes occurring during the interactions of evolving systems. Its approach expands cybernetic models (which deal with data transmission within closed systems, e.g. Ash, 1999, and do not address value judgements) by considering information as a process of knowledge generation [26]. Information is linked to the cognitive processes taking place within intelligent systems and therefore it becomes subjective with epistemological properties.

The following assumptions are the basis of information theory [25]:

---

**Fig. 2. Co-evolution**

a) Conceptual model
b) Information model
(H—humanity, E—economy, N—nature)
Information processes are real processes of system interactions; they are spontaneous and occur in an environment shaped by the interactions between the system’s components; they are subject to the law of information relevance, which is based on the system’s hierarchy, nature and complexity.

Information theory requires information to be analysed as sets (triads) of the system’s status related to generation, transmission and reception of information components described as the semantics, syntax and pragmatics trinity. The process itself is transformation and transmission of these states while the direction and content of the information process are determined by the information potential of the system, which in turn is indicative of its system diversity [22].

The use of this information model is for practical learning and knowledge generation to occur and they will reflect the constant processes of change triggered by co-evolution. Such learning is a property of intelligence, understood as a non-psychological, non-epistemological category (implied, for example, in artificial intelligence) and can be a property of a particular type of systems [22]. Martin [16] alludes about humanity having to deal with its own human intelligence but also with automated human thought and non-human like thought.

Many psychologists point to the fact that human intelligence is essentially expressed in various behaviours in varying contexts (instead of a general genetically inherited property) based on human beings’ hallmark – their flexible central nervous system that allows for learning to occur [20]. In humans, this learning is generated not only from the perspectives of natural sciences and philosophy but also from what epistemology considers external perspectives, such as technological, sociological, economic, political, spiritual and ethical as well as experience, wisdom and intuition. Human intellect is demonstrated through actions that are based on internal values and motivation that are not always obvious.

With the advance and constantly increasing power of computer technology, such non-epistemological intelligence will be present in a new type of information machines that should be able to generate information processes, which are set-up in pragmatics. They will be in a position to inform humanity about the state of the global system, and its human, economic and environmental components, in relation to being sustainable. The role of humans however would still be to negotiate the value judgements that define their actions (or inactions) to respond to co-evolution.

4. Global Green Information System (GGIS)

It is the first time in the history of humanity that computer power allows the following two previously improbable realisations:

1. Building of a global virtual (e.g. GIS-based) model of the planet Earth. Such a model could allow not just forecasting and prediction but also scenario building and trajectory projections within the probability spaces for the future. It will represent a global virtual reality that could be studies, analysed, explored and hopefully properly understood;

2. Establishing of a global green information system (GGIS) that collects, stores and transmits sustainability information across the globe. The main functions of GGIS should be:
   - Monitoring of the co-evolutionary processes, both globally and locally – it is extremely important that the system provides a functional link between these two levels;
   - Facilitating decision-making – it is crucial that the GGIS provides an environment where decisions can be negotiated based on signals originating from all localities. The system should allow for a new way of understanding the global challenges breaking the silos between the various elements, disciplines and political boundaries and making a qualitative shift to a holistic thinking;
   - Information storage – as any information system this is a basic function, however in the case of the GGIS access to these stored information should be made available across the globe;
   - Studying the global virtual model of the planet Earth – the data from the modelling process should be accessible through the GGIS.
What GGIS should not provide is the possibility of centralised control and decision-making. In other words, there should not be any particular locality that could dominate the decision-making process or control the access to information about the co-evolving processes.

5. Sustainability assessment and deliberative democracy

The information model for sustainable development handled by learning and intelligent machines can only be a facilitator for humanity to fulfil its stewardship role on this planet. Despite its knowledge generation power, Meadows et al. [17] refer to information and information flow as only one leverage point to intervene in a system in order to restore its sustainability. It is important to accept that any modelling and knowledge generation outcomes will be put into use according to people’s value systems and available decision-making systems and processes. Therefore sustainability assessment (e.g. [11]) becomes a crucial element.

According to Pope et al. [19], the most important function of sustainability assessment is the ability to provide a space for deliberation and exchange of ideas, understanding, perspectives and worldviews. It is essential that such an exchange occur in a non-hierarchical environment where there is full awareness that the tasks of achieving and maintaining sustainability are not only shared but cannot be achieved on an individual basis (be it an individual person or individual country) and without cooperation. On the other hand, sustainability as a global concept and aspiration needs to be translated into local actions. It requires things to be done differently with creativity, in collaboration and democratically.

In addition to the ever-increasing power of computer technology, more recently (particularly after 9/11) we also started to witness the appearance of a new type of democracy, namely deliberative democracy. It is based on decision-making through public deliberation by the people following social principles, such as respect, right to speak and dialogue (e.g. [5, 9, 10]).

There are already numerous examples of deliberation processes happening on-line (e.g. [2]). The GGIS can be linked and can feed expert information into such on-line deliberative processes. This will allow for a distributed decision-making around the globe with relevance to the particular localities in the presence of global information about the co-evolving global system. According to Black [2], participation in deliberative forums has shown to influence participants’ political knowledge, opinions and subsequent civic participation. Similarly, it is likely that deliberating on sustainability issues will contribute towards shaping people’s knowledge, opinions and subsequent civic actions. The GGIS has the potential to provide the virtual space for such deliberations to occur.

Conclusion

The global nature of the imperatives of sustainable development, and climate change in particular, require global knowledge and global action. So far the art of modelling and the science of sustainability have delivered outcomes that are only attempting to provide a more holistic way of viewing the world and gear the shift towards sustainability. Despite some insightful knowledge generation, we are now at a point where society has unprecedented computer power and unparalleled opportunity to put it into use for tackling the most complex and “wicked” problem in its history.

Based on the co-evolutionary paradigm, the argument presented in this paper for the establishment of a global green information system (GGIS) to facilitate deliberative democratic processes leading towards a more sustainable presence and actions by the human stewards of the blue planet Earth, could provide a way to embark upon a road of hope.

Acknowledgments

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Reference

STATISTICAL MODELLING OF BEHAVIOUR OF URBAN ECO-ENVIRONMENT SYSTEM

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Abstract

Statistical modelling is one of the most widespread methods of research of economic and urban eco-environment systems. The selection of methods of modelling of the urban eco-environment systems depends on a great number of conditions (modelling components) of the system being researched. The method of statistical modelling allows developing different scenarios of functioning of the investigated economic and urban eco-environment systems. Most of the economic processes and urban eco-environment systems are complex entities, consisting of a great number of interrelated subsystems (which in their turn also are complex objects and require a detailed study), changing their positions in space and time. For researching economic and urban eco-environment systems it is impossible to create an effective model by applying traditional analytical methods. In such cases it is necessary to use the methods of statistical modelling using Monte Carlo method. In the process of modelling the most frequently method used to model multivariate distribution incidental values is the parametric method of modelling. In this case it is necessary to establish parameters of common distribution of incidental values characterizing the factors under consideration. Usually this is done by means of evaluation of parameters of multivariate distribution, i.e. by establishing the most suitable distribution, deriving from the available empirical data. On the basis of the obtained model it is possible to estimate the behaviour of the investigated economic and urban eco-environment systems in relation with probabilities and therefore its expected values what is not possible to do with classical methods. When establishing the distribution of parameters describing the behaviour of investigated economic and urban eco-environment systems from empirical information most frequently is insufficient for a credible assessment of parameters offered by the function of distribution. In these cases it is necessary to use nonparametric modelling methods, given distribution of incidental values and then modelling parameters of distribution. The main objective of the paper is to describe the technique of using of statistical modelling methods for investigation of economic and urban eco-environment systems.

Key words: Statistical modelling, economic and urban eco-environment systems, effectiveness

Statistical modelling is one of the most widespread methods of research of economic and urban eco-environment systems. The selection of methods of modelling of the urban eco-environment systems depends on a great number of conditions (modelling components) of the system being researched. The method of statistical modelling allows developing different scenarios of functioning of the investigated economic and urban eco-environment systems. Most of the economic processes and urban eco-environment systems are complex entities, consisting of a great number of interrelated subsystems (which in their turn also are complex objects and require a detailed study), changing their positions in space and time. For researching economic and urban eco-environment systems it is impossible to create an effective model by applying traditional analytical methods. In such cases it is necessary to use the methods of statistical modelling using Monte Carlo method. In the process of modelling the most frequently method used to model multivariate distribution incidental values is the parametric method of modelling. In this case it is necessary to establish parameters of common distribution of incidental values characterizing the factors under consideration. Usually this is done by means of evaluation of parameters of multivariate distribution, i.e. by establishing the most suitable distribution, deriving from the available empirical data. On the basis of the obtained model it is possible to estimate the behaviour of the investigated economic and urban eco-environment systems in relation with probabilities and therefore its expected values what is not possible to do with classical methods. When establishing the distribution of parameters describing the behaviour of investigated economic and urban eco-environment systems from empirical information most frequently is insufficient for a credible assessment of parameters offered by the function of distribution. In these cases it is necessary to use nonparametric modelling methods, given distribution of incidental values and then modelling parameters of distribution. The main objective of the paper is to describe the technique of using of statistical modelling methods for investigation of economic and urban eco-environment systems.
Main role in waste management takes information technologies. The modern degree of development of information systems in social and economic area allows solving the problem on revealing factors which influence development urban social-economic systems as a whole. These allow an opportunity to use methods of statistics (scan statistics methods) more widely, using greater files of the information on dynamics of development of investigated object for different social, economical points of view. For example, a growing urban activity implies appearances of the extra-waste (black points) in no predictable place of the city street structure. Scan statistics method allows quickly and accurately determine whether is occurring. Thus the main problem is quickly and accurately determines whether the extra-waste is occurring. The use of centralized data recording and databases generates large quantities of data, with consequent limitations on human resources to search and analyze these data for waste (black points) clustering. Automated processes to evaluate waste clusters in place and in time (temporal clustering) are needed to enhance the efficiency of urban waste management. Detection of temporal clustering by using of the scan statistics offers some advance towards rapid detection of extra-waste, and modern statistical modeling methods have been made available.

In most cases possibility of traditional statistical conceptions and methods for investigation of real socio-economical object is bounded. Traditional statistical methods are more appropriate for investigation of influences of local factors – for localized objects investigation. Scan statistics allows investigating the socio-economical problems having extremely complex urban socio economical structure. The analytical description of such systems probably only in the simplified kind, enabling to consider the likelihood scenarios of development of investigated object, but it is rare when all object as a whole.

**Methodology of using of scan statistics for waste clustering.**

In each area $Z$, we assume that the data $X$ about waste level have a distribution function $DF$ (to be distributed under null hypothesis $H_0$) i.e.:

$$X \sim DF$$  \hspace{1cm} (1)

We also compute the maximum of $L_1$, which is the same function with parameters unrestricted. Each zone $Z$ has different parameters, given the heterogeneous accident distribution. We want to find the zone which maximizes the LR (likelihood ratio) between likelihoods $L_1$ and $L_0$:

$$LR(Z) = \left( \frac{L_1}{L_0} \right)_Z$$  \hspace{1cm} (2)

In the case of Poisson distribution process, the likelihood ratio takes the following form:

$$LF_i = \left( \frac{c_{in}}{n_{in}} \right)_{i} \left( \frac{c_{out}}{n_{out}} \right)_{i} \cdot I,$$  \hspace{1cm} (3)

where:

- $c$ - waste level;
- $n$ - expected level of waste;
null hypothesis significance testing.

For each potential cluster, we generate $N$ datasets using the parameters $\theta$ estimated for that zone $Z$, and we obtain a distribution for $LR$. Later the distribution $LR$ is used for identifying the statistical value of the cluster detected. The scheme for identifying a significant cluster using the Monte-Carlo method is presented in Figure 2.

The algorithm developed enables to detect the statistically significant clusters of the phenomena under investigation.

Results of generated $N$ datasets of distribution for $LR$ using the parameters $\theta$ are shown in Figure 3:

Spatial scan statistics is a powerful method for spatial cluster detection. With spatial scan statistics it is possible to search over a given set of spatial regions, find those regions which are most likely to be clusters and correctly adjust for multiple hypothesis testing.

The simplest frequency model for this situation (Figure 4) can be written as:

- null hypothesis $H_0$ (no clusters) $q_{in} = q_{all}$ everywhere (use maximum likelihood estimate of $q_{all}$);
- alternative hypothesis $H_1$ (cluster in region $S$), $q_{in} = q_{out}$ elsewhere (use maximum likelihood estimates of $q_{in}$ and $q_{out}$, subject to $q_{in} > q_{out}$).

This algorithm can be used for scanning accidents on the territorial unit of Latvia (Figure 5).

The spatial scan statistics have been used to detect and extract spatiotemporal clusters of wastes within the districts of city. As a case study, the distribution of wastes and logistic problems has been considered so far. Results show a dependency between high- and low-rates districts: in the low-rates districts black points number significantly less than in the high-rate districts. The use of district degree of technology and population density allows understanding the reason of the waste (black points) clustering in a certain district area. Results of this transdisciplinary research will increase the understanding of urban phenomena; improve urban waste man-
agement analysis and modelling waste management processes.

Fig. 5. Illustration of the scanning process of accidents on roads of Latvia (small territorial fragment)

In the Figure 6 black point’s density development in some region is illustrated. After 3 years we see the relocation of the maximum black point’s intensity factor from one sector to the other sector of the district. The modern informational technology allows improving data collection and data management processes. Scan statistics appears naturally at attempt to define clusters of events in our case waste clusters (black points), using the saved up statistical information about ecological situation (waste distribution by places and by time, accidental points – spot points, noise level in every district).

Fig. 6. Spatial-time scan statistic using for some city district.

Waste management problem fast increasing last time. Modelling different mixed strategies for different waste groups we can find more appropriate (cheapest way) strategy for all waste recycling (see Figure 7).

Fig. 7. Waste recycling mixed strategies for waste management cost reduction.

The aim of modelling waste recycling mixed strategies is to ensure the recovery and recycling of packaging waste in the most economically efficient and ecologically sound manner.

Conclusion

The scan statistic methodology at this stage looks at scenarios and probability models for the null distribution in the time series of events, assuming a constant background rate of random events according to the null distribution. It is important to distinguish the appropriate model for the relevant sampling process. Two major concerns with existing methods or approximations of a scan statistic are, knowing what really is correct, and what assumptions are made about statistical distributions used in the approximation. Scan statistic has wide area of applications: marketing, community infrastructure, disaster management, ecosystem health, air pollution, waste management, robotic networks, environmental management and policy, public health and environment, social networks.

The use of scan statistics enabled:
− to make analysis of waste management in towns and regions of Latvia;
− to detect clusters with utmost waste intensity applying scan windows of different sizes;
− to check significance of clusters detected with highest frequency of waste (black points) on the basis of null hypothesis equal to value of 0.05;
− to analyse the dynamics of changes of clusters detected taking into consideration the time factor.

Detection of significant clusters of waste (black points) in towns and regions of Latvia enables to take prompt actions for improving the quality of waste management in Latvia.

Reference
COMPETITIVENESS OF PLANNING REGIONS IN LATVIA

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Abstract

There are many qualitative changes in the global economy related with globalization, unbalanced development of countries, tightening of competitiveness struggle among different countries, regions and companies. Since Latvia have joined EU and plays more significant role in international area, more attention is paid to competitiveness of Latvia and its regions. The evaluation of regional competitiveness is difficult, because there is no one generally accepted definition of competitiveness at regional level. Different interpretations of competitiveness depend on the way how to achieve the certain level of prosperity. It is not possible to discuss fully about regional competitiveness, its real position and future perspectives using only traditional macroeconomic indicators. For that reason various extra synthetic indicators are used, that are calculated by different international organizations. The system of indicators for evaluating the Latvia’s regions competitiveness was worked out. It contains the main and outside factors that have an effect on competitiveness. The most competitive region of Latvia is Riga region, which has the highest index of competitiveness. The less competitive region is Latgale in the East of Latvia, which shows the lowest values almost in all positions in the model of competitiveness. Great differences between region’s development is a very topical problem for further development of Latvia.

Key words: Region, competitiveness, index, indicators, inside and outside factors

Question about evaluation and increasing of competitiveness of Latvia and its regions becomes more topically, because Latvia is engaged in international integration processes. Latvia is interested in providing equal possibilities to get work, income, social and cultural life for all inhabitants. It is necessary to work out scientifically approved method and model, how to calculate and evaluate competitiveness of definite territory to find out those factors, which dwarf or promote growth of competitiveness. So, it will be possible to show potential trend of region development.

Nowadays to characterize socio-economical situation in regions of Latvia Territory Development Index (TDI) is used, which is calculated for planning regions annually since 1999 [1,24]. However, indicators, which are used to calculate this index, do not characterize all factors of competitiveness, so TDI does not show the competitive advantages and competitiveness in total.

After analyses of the existing methods of the competitiveness evaluation it is possible to conclude, that the best way, how to characterize development and competitiveness of various territories is use of synthetic or generalized indicator – index of competitiveness.

The 1st step in the evaluation of the competitiveness index is to give the definition of regional competitiveness. In the centre of all definitions there is the opinion that competitiveness of region depends on the level of welfare in this region. Various definitions of competitiveness appear from the way, how to achieve high and sustainable level of welfare.

Following the existing researches and emphasizing the main task of regional competitiveness – to increase the level of region population welfare, the author gives the following definition of regional competitiveness:

Regional competitiveness is the ability of the region to use the existing resources effective, to maintain and attract the necessary resources, in such way to satisfy the needs of the region population as much as possible.

The competitiveness of regions is affected by various macroeconomic and microeconomic factors. The author of the article has worked out the model of the factors of regional competitiveness in Latvia, which is shown in Figure 1.

Fig. 1. Factors of regional competitiveness [made by the author]
The competitiveness of regions mainly is affected by life quality, productivity and level of employment in the region. These factors, in their turn, depend on the inside factors – human resources, social sphere, education, culture, health etc. Also the outside factors - political stability of the country, strategies, membership in different international organizations, play the important role in the evaluation of competitiveness of regions.

The 2nd step in the process of working out the RCI is selection of the indicators that will characterize 10 inside factors, to characterize the positive aspects of development, effectiveness and the negative effects, as well as let to evaluate the necessary changes in the activities. Optimal system of indicators would allow to understand regularities that determine and influence competitiveness of regions, to forecast the trend of regional competitiveness development and the necessary resources.

Using the author’s model of factors of regional competitiveness, there is selected limited amount of indicators to characterize each of the 10 factor groups. It was necessary to take into consideration the condition, that only the statistical data could be used.

There were selected 10 factors and 54 indicators to characterize the competitiveness of regions. Such factors as economy and production, accessibility, social and cultural sphere have most of all indicators. Factor groups that are concerned with human capital development, possibilities to get education, medical aid and innovation sphere have 3 indicators. The selection of the number of indicators depended on the statistical availability and the area of the indicator (indicators do not overlap).

The 3rd step is weighting of the factors. To weight the factors the method of comparing the factor pairs was used, which in point of fact is the expert method [5,93].

The 4th step is the normalization of indicators, the main task of which is to forestall situation, when one or more factors can dominate, because diapason of values can be very different. The normalized values are calculated from the original values that are marked in pieces, %, km etc. In the process of normalization the original measures disappear and various indicators become comparable.

After analyses of different value normalization methods the author chooses min-max normalization [0;1], which is used in situations, when the values can be only positive numbers and after the normalization they will be in the diapason from 0 to 1.

Normalization is made using the formula 1:

\[
d_i = \frac{a_i - a_{\min}}{a_{\max} - a_{\min}},
\]

where:

- \(a_i\) - normalized value of the factor;
- \(a_i\) - actual value of the factor;
- \(a_{\min}\) and \(a_{\max}\) - minimal and maximal values of the factor [6].

The choose of this method is well-founded, because:

- relations among the original data are kept;
- regions are compared not to the mean value of the country, but to the best or worse indicators;
- values of indicators are positive numbers;
- the normalized values are easy interpreted and understandable.

The 5th step is formation of RCI function. RCI function for the regional competitiveness model, made by the author, is shown in the formula 2:

\[
RKI = (a_{1}F_{C} + a_{2}F_{S} + a_{3}F_{IZ} + a_{4}F_{K} + a_{5}F_{V} + a_{6}F_{P} + a_{7}F_{IN} + a_{8}F_{R} + a_{9}F_{D} + a_{10}F_{E}) \rightarrow 1,
\]

where:

- \(RKI\) – index of regional competitiveness;
- \(\alpha_{1}\ldots\alpha_{7}\) - relative weights of the factors;
- \(F_{C}\) - index of human resources;
- \(F_{S}\) - index of social sphere;
- \(F_{IZ}\) - index of education;
- \(F_{K}\) - index of culture sphere;
- \(F_{V}\) - index of health sphere;
- \(F_{P}\) - index of accessibility;
- \(F_{IN}\) - index of innovations and research;
- \(F_{R}\) - index of economy and production;
- \(F_{D}\) - index of natural resources;
- \(F_{E}\) - index of ecology and environment.
In the 2\textsuperscript{nd} formula the RCI has a tendency to become 1, because in the process of data normalization the min-max normalization $[0;1]$ was applied. It means that the maximal value, which the RCI can get, is 1.

Index of each factor group $F_n$ is calculated using the indicators of this group and applying the min-max normalization $[0;1]$. To keep the value of the index between 0 and 1 the arithmetical mean of definite factor groups is calculated.

$$F_n = \frac{1}{N} \left( \frac{f_1 - f_{min}}{f_{max} - f_{min}} + \frac{f_2 - f_{min}}{f_{max} - f_{min}} + \cdots + \frac{f_n - f_{min}}{f_{max} - f_{min}} \right)$$

where:

- $F_n$ - index of the regional competitiveness factor;
- $f_1, \ldots, f_n$ - actual values of the indicators of the definite factor;
- $f_{min}, f_{max}$ - minimal and maximal values of the indicators of the definite factor;
- $N$ - number of the indicators of the definite factor.

The 6\textsuperscript{th} step is calculation of RCI. RCI was calculated for planning regions of Latvia, which are shown in Figure 2.

From Figure 2 we can see, that all planning regions are similar by area. Relatively Riga planning region is less than other regions, its specific weight is 16.5\% from all territory of the country. The biggest is region Vidzeme – 23.6\% from all territory of Latvia.

RCI for planning regions of Latvia is shown in the Figure 3.

In the Figure 3 it is possible to see, that the most competitive region is Riga planning region, where the RCI was 0.76965 in 2007. Kurzeme region was in the 4\textsuperscript{th} place after regions Zemgale and Vidzeme. The last place took planning region of Latgale.

To clear up why the definite region took the definite place, the indicators, used to calculate the RCI, and their relative weights were analyzed. In the Figure 4 it is possible to see factors of RCI and their values in planning regions of Latvia in 2007.

From the Figure 4 we can also see, that Riga planning region took the first place almost in all positions, but Latgale region was in the last place.

To evaluate levels of competitiveness the following values of the RCI were used:

- $0 - 0.1$ very low (VL)
- $0.2 - 0.3$ low (L)
To point out the main factors that promote or dwarf the competitiveness of planning regions, the table of factors and indicators that affect competitiveness of definite region was made (table 1).

### Table 1. Factors that affect competitiveness of Kurzeme region in 2007 [made by the author]

<table>
<thead>
<tr>
<th>Factors</th>
<th>Level of competitiveness</th>
<th>Riga region</th>
<th>Kurzeme region</th>
<th>Vidzeme region</th>
<th>Zemgale region</th>
<th>Latgale region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human capital</td>
<td>VH</td>
<td>0,11</td>
<td>I</td>
<td>L</td>
<td>G</td>
<td>L</td>
</tr>
<tr>
<td>Social sphere</td>
<td>G</td>
<td>0,09</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>L</td>
</tr>
<tr>
<td>Education</td>
<td>I</td>
<td>0,16</td>
<td>I</td>
<td>I</td>
<td>G</td>
<td>I</td>
</tr>
<tr>
<td>Culture</td>
<td>G</td>
<td>0,04</td>
<td>I</td>
<td>I</td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>Health</td>
<td>VH</td>
<td>0,09</td>
<td>VL</td>
<td>L</td>
<td>L</td>
<td>I</td>
</tr>
<tr>
<td>Accessibility</td>
<td>H</td>
<td>0,04</td>
<td>L</td>
<td>I</td>
<td>I</td>
<td>L</td>
</tr>
<tr>
<td>Innovations and research</td>
<td>VH</td>
<td>0,20</td>
<td>VL</td>
<td>VL</td>
<td>VL</td>
<td>VL</td>
</tr>
<tr>
<td>Economy and production</td>
<td>G</td>
<td>0,18</td>
<td>L</td>
<td>L</td>
<td>I</td>
<td>VL</td>
</tr>
<tr>
<td>Natural resources</td>
<td>I</td>
<td>0,02</td>
<td>H</td>
<td>I</td>
<td>VL</td>
<td>L</td>
</tr>
<tr>
<td>Ecology and environment</td>
<td>L</td>
<td>0,07</td>
<td>L</td>
<td>L</td>
<td>G</td>
<td>H</td>
</tr>
</tbody>
</table>

From the table 1 it is possible to conclude that total level of Riga region competitiveness is high, if we compare Riga region with other planning regions of Latvia. The most competitive areas are health, innovations and research and human capital, which have the highest relative weights. In the sphere of ecology and environment Riga planning region competitiveness is low, but this factor group is not so important in total RCI, because its relative weights is only 0,07.

Competitiveness of Kurzeme region, if it is compared with other planning regions of Latvia, is below the average. The most competitive area in Kurzeme region is natural resources. However, as the relative weight of this factor is small (0,02), natural resources do not affect RCI substantially. But in the areas, which relative weight is higher (innovations and research – 0,2, economy and production – 0,18), competitiveness of Kurzeme region is low or very low.

Vidzeme region competitiveness is intermediate low, but it shows high results in such areas like education and ecology and environment. Education plays more important role in the total RCI, because its relative weight is one of the highest – 0,16.

Competitiveness of Zemgale planning region is also intermediate low, except such spheres as human capital (good performance) and ecology and environment (high performance). The most important is the human capital, because its relative weight is 0,11. But Zemgale region is the most competitive regions of all planning regions of Latvia in the area of ecology and environment.

The last place took Latgale region, which competitiveness level is low or very low, except ecology and environment (good performance).

To work out the regional policy and state assistance tools, it is necessary to take into consideration and to develop in the future factors and advantages that promote competitiveness of every region. But, special attention must be paid to those factors that dwarf competitiveness of the region, it is necessary to evaluate necessity and possibility to improve them.

**Reference**

REGIONAL NETWORKS SUPPORTING INNOVATIONS – THEORETICAL STUDY

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Abstract

Region of knowledge and innovation is the region that builds economy based on knowledge, this is „learning” region, which has regional innovation strategy and efficiently operating regional innovation support system. In the world’s economy, innovations are the basis of modern strategies for economic growth, development of enterprises and forming the prosperity and well-being of the nations. We can notice dynamic movement of structures of well developed economies into direction of industries and services basing on knowledge. In perception of innovation and innovation process, there is a departure from single event in favour of complex of phenomenons and events creating new products, processes, technologies and services. Innovation processes run in specific system of relations including networks of enterprises, scientific-research institutions and public administration. In the same time we can see bigger and bigger role played by the correlations occurring between dynamics of creation and development of innovative enterprises, and organization of regions and availability of specialised financial instruments. Factor that decides about competitiveness of enterprise is innovation, while the pace of changes in engineering, technology and organization causes that only the enterprise capable to introduce innovative changes can survive and stay on the market. In the times of building the economy based on knowledge, all enterprises, even these smallest ones, are under strong pressure of innovations, frequently in many disciplines/areas in the same time (new products, processes, techniques and technologies, organization, relations with customers and suppliers). Effectiveness of entrepreneurs within that range depends in big degree on their competences, management skills and assumed strategies. Scientific researches point out growing role of environment, in which the enterprises are functioning. Very important are also assumed system solutions that determine general frames for functioning of the economy (regional innovation systems). Regional innovation system is complex, territorial and system view on problem of innovativeness of the economy. Its functioning favours reduction of innovation risk for specific business subject, makes it easier to absorb different kind of knowledge, provides possibility for interactive learning and exchange of experiences. It is a base for building the competitiveness of given region in times of global economy, where innovation, knowledge and learning process are the key factors for economic success. It allows for adaptation of regional economies to globalisation process. In Poland regional innovation systems are weakly developed, because process of their building in organizational dimension has been started just recently.

Key words: regional networks, innovation

Introduction

Regional network connections are the concepts fitting into the stream of system approach to innovativeness in spatial dimension. They include subjects representing entrepreneurship, institutional surrounding of business and units from scientific-research zone.

Innovation networks assume more or less formal character and they are identified with organizational structures oriented for generating innovations. Therefore it is possible to distinguish categories of innovation networks based on more formalized cooperation agreements, such as partnership agreements concerning jointly realized research-development works or commercial agreements concerning exchange of results of research works.

Innovation connections are being also created by financial involvement of enterprises in form of direct investments or licensing of technologies. Less market dimension is assumed by innovation networks, which were formed in result of jointly appointed research associations, as well as the networks established in purpose of participation in research programs financed with public means. The networks supported thanks to informal exchange of knowledge between enterprises by means of scientists and engineers employed in these enterprises have other, informal character.

Innovation connections networks with special character are institutionalised mechanisms of research-development cooperation involving partners coming from industry and science sector. They include, amongst the others, scientific-technological parks, technological incubators and technology transfer centres. This type cooperation innovation networks have in purpose first of all to stimulate transfer of knowledge from research-development sector to industrial sector and because of that they provide many mecha-
nisms allowing for easier process of know-how transfer and knowledge commercialisation.

Economy based on knowledge

Fundamentals of economy based on knowledge were initiated together with acceptance of Lisbon Strategy, having in purpose to create on territory of Europe the most competitive economy in the world.

Economy based on knowledge is the economy, which can be characterised by fast development of fields connected with processing of information and development of science, mainly these branches of industry that are included to so called high technology, as well as techniques and services of information society. Economy based on knowledge can be distinguished by a few substantial features: investments in researches and development, increase of importance of export and international connections; in knowledge based economy there is a growth of employment in branches, which intensively use the knowledge, a new type of enterprise is appearing – enterprise based on knowledge, high share of service sector in employment and Gross Domestic Product, formal and informal connection networks play significant role here, non-exhaustiveness of knowledge.

Scientific studies about economy based on knowledge started to appear in the middle of nineties, where The Knowledge-Based Economy is defined as: economy directly based on production, distribution and use of knowledge and information. This means that the knowledge, in the view of such formulated definition, is important factor determining the pace of development and level of economic development. In knowledge-based economy, economic growth does not depend on a few key branches of economy, such as agriculture or mining industry, but it depends on all branches, which have to vastly use the knowledge in processes of production and providing services. This is the economy taking advantage of knowledge, creativity, and technology for producing the products and services. Key for realization of this goal is innovation.

Development of economy based on knowledge generates development of new type of society – knowledge-based society. In forthcoming decades, existence of the Polish nation and society as opposed to past centuries will not depend on military power, but it will depend on economic power. Economic power in turn has its source in resources of knowledge, which will be gained and used by the society.

Investing in knowledge in scale of the whole economy applies to relatively easy to catch investments in: computer software, research and development (R + D), education (including schooling), continuing education, IT technologies, investments in sector of high technologies, including foreign investments. Wisely planned investments in knowledge, including first of all investments in education are economically profitable.

The Knowledge-Based Economy in regional meaning is being built using for that the models of learning region, local pro-innovative environment, clusters or regional innovation systems. Regional development policy realized by European Union countries includes assumptions of these concepts.

Key factors for learning processes – transferring the knowledge, sharing it with others and creating innovations, are the cooperation and trust growing up from cultural context and from local environment.

The main assumption of innovative environment concept is a claim that source of innovation is not an enterprise, but first of all local environment, in which it is functioning.

Such type structure with organic character reinforces local innovativeness by collective
process of learning. Innovativeness is perceived as integration of information and resources by local environment. One of the elements of innovative environment are strong territorial and institutional structures, which form an instrument necessary in management process and create climate connected with learning. The most important interest point of innovative environments is supporting local synergies. Hence territory is perceived both as the reason and effect of synergy of the players and collective learning processes. Further works over innovative environment concept came to fruition with appearance of better established and more practically used theory of regional innovation systems. We define Regional Innovation System as network of cooperation between organizations and institutions operating in given region, which goal is to develop the innovativeness of that region by supporting innovative potential of the enterprises. Another words we can state that RIS, which is an abbreviation from Regional Innovation System, is a flexible, creative and regional socioeconomic system with the widest possible connections, which takes advantage of local attributes and resources that decide about production and product in adequate way to the peculiarity of local market.

Learning region

Approach stressing out a fact that enterprise competitiveness factors arise first of all in conditions of regional development was defined with term of learning region. Role of public authorities is underlined here, which task should be to stimulate all factors responsible for development of science, researches, improvement of human resources and applying high technology in enterprises of learning region.

The main driving force of learning region is continuous innovation and skills to adapt to changing market conditions. According to OECD, model of learning region sets a direction, in which regions should follow for effective reaction to challenges resulting from appearance of learning economy. Key issue for learning region is an ability to be flexible and support interaction including exchange of knowledge between various subjects in region in the face of changing economical circumstances. Learning region can be characterised by regional institutions, which facilitate individual and organizational learning by coordination of flexible networks including economical and political subjects. Regional networks creating learning region are not restricted to business subjects, but they also cover social, political and institutional animators, where transferring information and knowledge is natural and frequent process.

Learning region concept is based in special way on assumptions of dynamic interactive models of innovation process. Process approach to innovation has grown up on the basis of criticism towards traditional linear mode of innovation „pushed” by science or „pulled” by the market. Innovations are understood as interactive process occurring between the companies and scientific infrastructure, also between producers and users on inter-organizational level as well as between the companies and wider institutional environment. That is why innovation process should be perceived as interactive learning process, in which various institutional mechanisms play a great role.

The networks are the main learning source, though. According to assumed interactive innovation model, innovation processes in the region run by networking rather than as a part of hierarchic structures and markets. Therefore for realization of learning region concept, similarly as in case of systems of innovation and clusters, regional dimension of networking phenomenon is of the key importance.

As the basic attribute of learning region we can assume regional innovation networks perceived as effective mechanism of collective learning and generating innovations.

Innovation networks focus formally independent organizations under long term relations implicating exchange of information, interactive learning process and direct cooperation. Network forms of management are more preferred from the markets and hierarchic structures, because they provide more flexibility and more enduring and effective base for coordination of common actions, which can not be found in anonymous market relations. It is also worth to notice here, that despite of justified associations and similarities between innovation networks and innovation environment, abovementioned concepts have to be distinguished. Innovation network is organizational system of cooperation and exchange established in purpose of development of knowledge, products and services. Whereas innovation environment it is existing ability of the region in more institutional dimension, which leads to development of innovation networks.
Innovation networking process assigns significant role to specific social norms. Innovation networks can develop only in presence of required minimal level of mutual trust. In consequence it is admitted that innovation networks are always socially conditioned. The networks function the best as innovation social organisms in situation, where they take advantage of different areas of silent knowledge coming from regional actors, such as: associations, enterprises and business surrounding organizations. It happens this way, because exchange of silent knowledge requires more trust and culture understanding of developing ones thanks to geographical nearness.

So that is why non-profit type organizations should be the catalysts for innovation networks, because they are usually the most trustful units. Such organizations, as for example regional development agencies, are to fulfil here a function of regional animator responsible for facilitating interactive processes between the enterprises and research-development zone. It confirms the legitimacy of assumed claim about important role of social capital and non-economical interdependences in coordinating the proceedings in regional economy. Taking advantage of knowledge flows in spatial dimension as mechanism stimulating innovation ability of the region is also emphasised from the perspective of creating effective innovation systems. It is based even in bigger degree on theory of systems and role of social networks in knowledge flows and creating innovations in region. There are attempts to combine the groups of terms mentioned above into one whole unit presenting them as subsequent stages of regional development – from innovation cluster through the learning region, to the highest form of development in form of regional innovation system.

Innovation system concept is a higher stadium of concept of innovation networks, learning region, local innovation environment and clusters.

Learning regions is perceived as especially effective type of regional innovation system. Regional innovation system is based on flexible network systems, which generate the basics for innovativeness of region’s economy. It has to be remembered that idea of regional innovation system has grown up based on innovation system concept with bigger range, defined in scale of the whole country and determined with the name of National Innovation System.

Regional innovation systems

Regional innovation system concept is based in its assumptions on evolutionary technology change theory. Justification of above-mentioned thesis are two basic preconditions that allow to notice the relation between evolutionary economy theory and idea of innovation system:

Innovation is an interactive process occurring between the enterprises and scientific infrastructure, between various functions in the enterprise, between producers and users on inter-organizational level, as well as between the enterprises and wide institutional environment. That is why innovations should be perceived as interactive learning process, in which wide range of institutional mechanisms has important role to play.

Based on assumptions mentioned above, wide concept of innovation system was built that takes into account both economical dimension of innovation process and social character of this process. Hence the essence of such system is cooperation and synergy of various categories of regional stakeholders in processes of creating and using the knowledge. Necessary condition for effective functioning of the system is existence of well formed social relation networks between all actors taking part in regional innovation processes.

As it has already been mentioned earlier under characteristics of innovation networks and learning region concept, also innovation system concept is based on assumption, that interdependences between the actors of innovation process affect its dynamics and in result they have impact on competitiveness of given location. System is dynamic and it is subject of continuous evolution, and one of more important factor affecting its development is learning ability of individual units and system as the whole thing. Innovations rising under the system are the result of interactions and feedbacks occurring between the actors engaged in creation, transfer and using different type of knowledge. That is why number of institutions involved in functioning of innovation system is so important as well as institutions that increase the number of access channels to external sources of knowledge. Such subjects are included into process of creation and distribution of knowledge under the system as: universities and higher schools, research-development units, technology transfer
centres, technological parks, business surrounding institutions, etc. Effectiveness of gaining and taking advantage of knowledge of these institutions has influence on successes of the enterprises. Therefore regional innovation system should be perceived in categories of cooperating organizations involved in process of creating, diffusion and taking advantage of knowledge and innovations in the region.

Innovation system in regional dimension is public-private cooperation forum of business world, local self-government and national administration, scientific-research and educational institutions as well as non-governmental organisations allowing for activation of local growth factors and making better use of the resources. Innovation system is flexible socioeconomic system with wide connections, which is capable to take advantage of local resources and factors determining production processes, adequately to peculiarity of regional market. Whereas it should be stressed out that it is not possible to define one universal model of such system.

Under innovation system the innovative enterprises come into mutual interactions with their suppliers, customers as well as competitors, thus creating one of the pillars of system – zone of entrepreneurs. In the same time the enterprises cooperate with scientific-research sphere responsible mainly for creating new knowledge about market potential. This sphere includes wide spectrum of research-development institutions and universities, which are the source of technological services, scientific solutions as well as advisory and education. The third pillar of innovation system, or another words its subsystem, is formed by local and regional development institutions, which fulfil a function of some kind of catalyst for the whole system. Institutional backup of system is formed by non-profit organizations and the ones that realize regional entrepreneurship support program.

They support the transfer and commercialisation of technological knowledge, create friendly mechanisms for establishing new innovative enterprises, and also they could provide higher risk financial aid in favour of innovative undertakings.

Conclusions
1. Theoretical considerations give the grounds to keep the thesis, that implementation of innovation policy on region level is more effective than on country level. Regional innovation system concept is not in contradiction with cluster model. On the contrary, it provides excellent complement and can be successfully used in creating regional development in regions under restructuring period.

Fig. 3. Sub-regional Innovation Support Network - On example of Kujawy and Dobrzyn Land Region, Poland (own elaborations)
2. Partnership of participants of innovation processes in Polish regions is very weekly developed. Actions of supporting institutions are ineffective or inadequate to the role, which they should fulfil. Coordination of innovation processes in practice does not exist.

3. European regions, by their experience, point out the advantages coming from following the experiences of other regions and external experts both on stage of researches and in process of formulating region innovation development strategy.

4. Recapitulating it can be noticed that in theories explaining regions’ development mechanisms, the factors responsible for the growth evolve from so called hard ones (often infrastructural and quantitative) towards soft ones – qualitative, the most often dependent from human capital, social capital, quality of services, image of the unit, etc. Therefore the theory seems to follow the reality in that matter, however there is one essential problem – problem of identification and reliable measurement of human capital on regional level.

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RISK MANAGEMENT FOR SUSTAINABLE GROWTH

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Abstract

Sustainable development refers to the fulfilment of human needs through simultaneous socioeconomic and technological progress. This kind of progress is dependent upon continued economic, social, cultural, and technological progress, but in order to achieve this status careful attention should be paid to preservation of the resources. In the process mentioned an adequate risk management plays an important role and could not be neglected. This evidence allows coming to the conclusion that sustainable development could be achieved thorough consideration of risks, uncertainties, and information and knowledge imperfections. The phenomenon of risk plays a ubiquitous role in finance and insurance as well as in economics, since it is involved in nearly all financial and economic activities. It is worth to mention that each financial and economical crisis leads to insights and affirmation that we now recognize the causes, but on the other hand the question about appropriate risk management is asked very seldom, and now even after the subprime crisis we do have the same ritual - improvement of methods and tools, while no evaluation of the existing approach is done. The aim of the paper is to give a survey of the development status of the Solvency II process. The approach has been motivated by the recent developments in the insurance and finance business, where risk management and risk measures have become crucial to calculate capital requirements. The article gives an overview, analysis and evaluation of the methods that are currently available in practice.

Key words: sustainable development, risk management, Solvency II

Introduction

In recent years, risk management (see e.g. [1, 2]) and also appropriate and adequate risk measures (see e.g. [3]) have gained importance due to Basel II requirements in the banking world and due to the current discussions about appropriate risk measures to be used for the computation of capital requirements in the Solvency II process in the insurance businesses.

Risk management at the present time is used to optimize the solvency capital of a business. The aim is to determine a company-wide solvency capital value, which quantifies the risk of business activities. Therefore, the risks have to be summarized in a risk measure. Usual risk measures are variance, standard deviation, Value at Risk, Expected Shortfall, Lower Partial Moments and other risk measures. It is often assumed that the risks are stochastically independent, although e.g. many insurance risks are heavily dependent in the tails.

Companies providing financial services have to compute premiums that are adequate to its risks. Therefore, the premium is a risk measure in general. In the insurance business, there are two applications of risk measures: the calculation of premium rates for the underwriting and of risk capital requirements for solvency (calculation of size of solvency capital). A proper premium rate enables a company to operate smoothly while making reasonable profits for its shareholders, and the capital requirements ensure that the risk of insolvency remains acceptable.

After Chernobyl, Russian crisis, the E-business Hype, the Enron and Worldcom scandal, and now even after the subprime crisis we have the same ritual as every time after crisis – discussion about improvement of methods and tools, while no evaluation of the existing approach is done. The aim of the paper is to give a survey of the development status of the Solvency II process. The approach has been motivated by the recent developments in the insurance and finance business, where risk management and risk measures have become crucial to calculate capital requirements. The aim of the current paper to give an overview about the development of Solvency II and to provide an analysis of risk measures used in practice (in particular Value at Risk is going to be discussed) in order to answer the question, if there is a necessity for new risk management approach or pre-crisis risk management system is still satisfactory.

1. Solvency II – Brief Overview

Over the past years, risk management and risk measures have gradually more gained importance. There is no doubt that managing risks is supposed to optimize the administration of the
scarce capital of security in a way that on the one hand the risks are covered, but on the other hand the least possible capital of security is kept. The aim of this procedure is to define a corporation-wide objective criterion to determine the capital of security, which quantifies the risk of business activity. Therefore, the complex risks have to be reduced to a one-dimensional risk measure.

Solvency II has been initiated by the European Community, and it will introduce a new solvency regime which will be characterized by an integrated risk management approach. In 2001 the European Commission started this project in order to review the European framework for the prudential supervision of insurers, and Solvency II Framework Directive was presented in July 2007, Europe wide implementation is scheduled to be completed by 2011 (follow |4|). Solvency II has a number of objectives, whereby the protection of policyholders is one of the most significant. While previous regulatory action regulated the industry on the product level to protect the policyholders, the focus has been shifted to the level of capitalization. But as there is no commonly accepted expression of risk in the financial statements – and therefore there is no possibility to rely on „general level“ capital requirements and specific regulation is needed.

The overall architecture of Solvency II (European Commission (2003)) follows a three – pillar structure (follow figure 1) and is analogous to Basle II in the banking sector.

![Solvency II tree – pillar structure](image)

The first pillar includes the risk-based quantitative capital requirements, which are calculated by a standard model or a more detailed, specified internal model. Solvency II divides the capital requirements in two levels: the minimum capital requirements designate the „level of capital below which an insurance undertaking’s operations present an unacceptable risk to policyholders. If an undertaking’s available capital falls below the minimum capital requirements, ultimate supervisory action should be triggered” (Committee of European Insurance and Occupational Pensions Supervisors (2005)). The Solvency Capital Requirements is the amount of capital, to which we will refer as economic capital, reflects the required capital to meet all obligations over a specified time horizon.

The second pillar reflects the qualitative risk management. Its key elements are the control of internal risk models, governance processes, stress tests or the quality of risk mitigation.

The third pillar stands for disclosure and transparency to reinforce the market mechanisms and risk-based supervision.

The basic concept of Solvency II have been developed so far, however, the details are not yet worked out. The aim of the European Commission is the commencement of the new solvency regulations in the year 2010 – 2011. And that is the first problem on the field on risk man-

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**Fig. 1. Solvency II tree – pillar structure**

<table>
<thead>
<tr>
<th>Measurement of assets, liabilities and capital</th>
<th>Supervisory review process</th>
<th>Disclosure requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eligible capital</td>
<td>Internal control</td>
<td>Current disclosure</td>
</tr>
<tr>
<td>Technical provisions</td>
<td>Risk management</td>
<td>Requirements (National</td>
</tr>
<tr>
<td>Capital requirements</td>
<td>Corporate governance</td>
<td>GAAP; National</td>
</tr>
<tr>
<td>Asset valuation</td>
<td>Stress testing</td>
<td>regulatory reporting;</td>
</tr>
<tr>
<td>Risks to be included</td>
<td>Continuity testing</td>
<td>IFRS 4; IFRS 7)</td>
</tr>
<tr>
<td>Risk measures and assumptions</td>
<td></td>
<td>Future disclosure</td>
</tr>
<tr>
<td>Risk dependencies</td>
<td></td>
<td>requirements (IFRS;</td>
</tr>
<tr>
<td>Calculation formula</td>
<td></td>
<td>IAIS; EU legislation)</td>
</tr>
<tr>
<td>Internal model approach</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**Pillar I**

**Pillar II**

**Pillar III**
agement - international and national regulations adaptation process takes too long period of time, but fast changing business environment can not wait too long for the new requirements or mechanisms that are supposed to prevent crisis.

The requirements for a standard model in the Solvency II framework are complex. The function of the model is to optimize the present equity capital, to use the equity capital under yield return-risk-aspects and to deposit sufficient capital to cover the taken risks. The aim is to create an easy standard model which is transparent for the supervisory authority and needs only a few parameters.

Furthermore, the model should evaluate all basic risks in the company homogeneously and should measure all basic risks through one quantitative factor, so that two periods or two businesses can be compared. However, the model can only be an early indicator and can not replace a detailed inspection. This idea should be taken into consideration while discussing the sufficiency of the international risk models.

The development of risk orientated supervision and solvability systems began several years ago in the Netherlands, Great Britain, Switzerland and Germany. Even thought Switzerland is not a member of the European Union there is a necessity to include also this system in the comparison, while this particular country plays an important role on the financial market and in the business environment.

The following table (see Table 1) presents main differences in the system among different European countries mentioned. It is worth to point out that Value at Risk is one of the mainly used risk measures, and that is why it is necessary to pay attention to this risk measure and evaluate it.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Germany</th>
<th>Netherlands</th>
<th>Great Britain</th>
<th>Switzerland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valuation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum and target levels</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solvency Capital Requirements</td>
<td>Minimum Capital Requirements</td>
<td>European Union rules</td>
<td>Minimum Capital Requirements</td>
<td>Minimum Capital Requirements</td>
</tr>
<tr>
<td>Solvency Capital Requirements</td>
<td>Solvency Capital Requirements</td>
<td>Solvency Capital Requirements</td>
<td>Enhanced Capital Requirement</td>
<td>Solvency Capital Requirements</td>
</tr>
<tr>
<td>Solvency classification</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. based on risk factors</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>n/a</td>
</tr>
<tr>
<td>2. based on scenarios</td>
<td>no</td>
<td>yes</td>
<td>Minimum Capital Requirements</td>
<td>2. yes</td>
</tr>
<tr>
<td>Confidence level</td>
<td>99,5%</td>
<td>99,5%</td>
<td>99,5%</td>
<td>99,0%</td>
</tr>
<tr>
<td>Risk measure</td>
<td>Value at Risk</td>
<td>n/a</td>
<td>Value at Risk</td>
<td>Expected Shortfall</td>
</tr>
<tr>
<td>Time horizon (in years)</td>
<td>One year</td>
<td>One year + multi</td>
<td>One year</td>
<td>One year</td>
</tr>
<tr>
<td>Internal models</td>
<td>Strongly recommended</td>
<td>Recommended</td>
<td>Recommended</td>
<td>Strongly recommended</td>
</tr>
</tbody>
</table>

2. Value at Risk

One of the most popular risk measures is the Value at Risk (VaR), which is used due to regulatory reasons in finance and in the insurance businesses. In the literature the Value at Risk is also called „Monetary at Risk“ or „Capital at Risk“. The Value at Risk is a one-sided and monetary as well as future oriented and risk adjusted performance measure, which corresponds to the percentile principle of the premium principles for insurance businesses.

The study of literature leads to the conclusion that many different definitions of VaR exist, which could be explained as a result of the inaccuracy of authors, as they do not make a distinction between lower and upper Value at Risk.

In order to solve this problem let define the Value at Risk as the $\epsilon$ - quantile with $\epsilon = 1 - \alpha$, where $\alpha$ is a probability of default.

Before taking further steps in the discussion about VaR some words should be mentioned about quantiles. Let $X \in \mathbb{Z}$ be a real valued ran-
dom variable and $\varepsilon \in (0;1)$. If $q$ satisfies the following inequalities, then it could be called a $\varepsilon$-quantile:

$$P(X < q) \leq \varepsilon$$

$$P(X > q) \leq 1 - \varepsilon$$

$$P(X < q) \leq \varepsilon \leq P(X \leq q)$$

(1)

The lower $\varepsilon$-quantile of $X$ (usually defined as an occurring loss to the value that is monetary expressed) is to be defined as:

$$q_{\varepsilon^-}(X) = \inf\{x \in R | F_X(x) \geq \varepsilon\}$$

(2)

where $R$ is a real space and $F$ – cumulative distribution function of $X$. In the similar way the upper $\varepsilon$-quantile of $X$ could be defined:

$$q_{\varepsilon^+}(X) = \inf\{x \in R | F_X(x) > \varepsilon\}$$

(3)

and therefore, $q$ is a $\varepsilon$-quantile in case the following inequity is satisfied:

$$q_{\varepsilon^-}(X) \leq q \leq q_{\varepsilon^+}(X)$$

(4)

For further information regarding this inequality follow considerations provided by [9].

The following part of the paper is going to discuss VaR - risk measure. Let $X$ be a real-valued random variable with $X \in Z$ and $F$ – the cumulative distribution function of the risk $X$ and finally $\alpha \in (0;1)$ - be a confidence level.

Taking into consideration the idea about lower and upper risk measure mentioned in the second part of the current paper; the lower VaR is given by the following equations and it is the lower $(1-\alpha)$-quantile of $X$:

$$\text{VaR}_\alpha(X) = q_{1-\alpha}(X) = \inf\{x \in R | F_X(x) \geq 1-\alpha\}$$

$$= \inf\{x \in R | P(X \leq x) \geq 1-\alpha\}$$

$$= \inf\{x \in R | P(X < x) \leq \alpha\}$$

$$= \inf\{x \in R | P(X > x) \leq \alpha\}$$

$$= F_X^{-1}(1-\alpha)$$

(5)

The upper VaR is given by the following equation and is the upper $(1-\alpha)$-quantile of $X$:

$$\text{VaR}_\alpha^u(X) = q_{\alpha}(X) = \inf\{x \in R | F_X(x) > 1-\alpha\}$$

$$= \inf\{x \in R | P(X \leq x) > 1-\alpha\}$$

$$= \inf\{x \in R | P(X > x) < \alpha\}$$

$$= \sup\{x \in R | P(X \geq x) \geq \alpha\}$$

(6)

The advantages of Value at Risk are simplicity, wide applicability and universality. As it was already mentioned VaR is the most widely used risk measure in financial institutions for market risk and credit risk due to historic and regulatory developments.

Risk managers can control the default risk via the use of Value at Risk. However, the Value at Risk also possesses some serious weaknesses. The Value at Risk as a risk measure is heavily criticized for not being subadditive in general; see also the discussion by Embrechts et.al. [10] and by McNeil et.al [1].

In capital market models in most of the cases the normal distribution is used, which is a member of the elliptical distribution family. That is why it is an idealized situation, where all portfolios can be represented as linear combinations of the same set of underlying elliptically distributed risks. Thus, the Expected Shortfall and the Value at Risk are affine functions of mean and standard deviation. Therefore, it is possible to come to the conclusion that the Value at Risk provides the same information about the tail loss as the Expected Shortfall does.

In the elliptical world everything is proportional to the standard deviation which in turn is subadditive. Therefore, in the normal world both Value at Risk and Expected Shortfall are subadditive for $0.5 < \alpha < 1$. The following theoretical example shows that this is no longer true outside the elliptical world.

Suppose that the risks $X_1$ and $X_2$ follow a Pareto distribution, each having density function like:

$$f(x) = \frac{1}{2(\sqrt{1+x})^3}, x \geq 0$$

(7)

and with shape parameter $\lambda = \frac{1}{2}$ and form parameter $\beta = 1$. The cumulative distribution function is given by:

$$F(x) = 1 - \frac{1}{\sqrt{1+x}}, x \geq 0$$

(8)
Then the density $g$ and cumulative distribution function $G$ of the aggregated risk $S = X_1 + X_2$ can be computed in the following case, among others: $X_1$ and $X_2$ are independent risk, then:

$$g(z) = \frac{z}{(2+z)^2 \sqrt{1+z}} \sim \frac{1}{\sqrt{1+z^3}}$$

$$G(z) = 1 - 2 \frac{\sqrt{1+z}}{2+z} \text{ for } z \to \infty$$

From the cumulative distribution functions the aggregated loss could be expressed as following for $0 < \alpha < 1$:

$$\text{VaR}_\alpha = \frac{4}{\alpha^2} - 2 - \frac{2}{1 + \sqrt{1 - \alpha^2}}$$

$$\sim \frac{4}{\alpha^2} - 4(\alpha \to 0)$$

(10)

The VaR for both $X_1$ and $X_2$ is given for $0 < \alpha < 1$ by:

$$\text{VaR}_\alpha(X_1) = \inf \{ x \mid F_{X_1}(x) \geq 1 - \alpha \} =$$

$$= \inf \{ x \mid P(X_1 \leq x) \geq 1 - \alpha \} =$$

$$= \frac{1}{\alpha^2} - 1$$

(11)

$$\text{VaR}_\alpha(X_2) = \inf \{ x \mid F_{X_2}(x) \geq 1 - \alpha \} =$$

$$= \inf \{ x \mid P(X_2 \leq x) \geq 1 - \alpha \} =$$

$$= \frac{1}{\alpha^2} - 1$$

(12)

The following graph (Figure 2) shows the VaR for the example above: the first curve (see Figure 1 – left curve) is identically with the curve of the sum $\text{VaR}_\alpha(X_1) + \text{VaR}_\alpha(X_2)$; the second curve (see Figure 2 – right curve) is equivalent to the aggregated loss (equation 10).

Thus, the Value at Risk does not consider the question of „how bad is bad“ (follow considerations by Artzner et. al. [11] or Dhaene et al. [12]). The Value at Risk is only related to a frequency estimate of a high claim. Therefore, it does not say anything about the severity (conditional expected loss) when that (rare) loss happens.

However, in the insurance business distributions of the elliptical distribution family are usually not used. Therefore, it is necessary to consider the property of subadditivity.

Let understand subadditivity as mathematical equivalent of the diversification effect. For a subadditive risk measure, portfolio diversification always leads to risk reduction, while for a non-subadditive risk measure it may happen that the diversified portfolio requires more solvency capital than the original one. Several examples and references about this topic can be found by [13].

Another disadvantage is the absence of continuity of the Value at Risk as a function of the level $\alpha$ for a fixed risk $X$.

The Value at Risk as a quantile function is only continuous from the right. Therefore, it is possible that for slightly different confidence levels one obtains highly different values for the Value at Risk.

However, this disadvantage can be corrected by calculation of the Value at Risk for many levels. At high divergence of the confidence levels it is useful to regard economic considerations in the calculation of solvency capital.
Hence, it is possible to say that the use of Value at Risk as risk measure requires caution and there is the necessity to look for other possibilities for other risk measures.

Conclusions
Over the past years, risk management and risk measures have increasingly gained importance. Managing risks is supposed to optimize the administration of the scarce capital of security in a way that on one hand the risks are covered and on the other hand the least possible capital of security is kept.

The aim is to define a corporation-wide objective criterion to determine the capital of security, which quantifies the risk of business activity. Therefore, the complex risks have to be reduced to a one-dimensional risk measure.

The insurance supervisor’s task is to ensure that the interests of the policyholders are protected and the security of the underwriters is guaranteed. Therefore, rules for a sufficient capital of security as well as associated methods of risk management have to be fixed.

The current paper gave the overview of the development status of the Solvency II process. The approach has been motivated by the recent developments in the insurance and finance business, where risk management and risk measures have become crucial to calculate capital requirements.

The article discussed main issues and evaluated the method – Value at Risk that is currently used in practice. Several disadvantages of the approach have been discussed and in conclusion it is worth to say that new risk management tool is needed (that was indirectly proved by the current financial crisis).

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BANKING SECTOR IN THE CONTEXT OF THE NEW WORLD FINANCIAL REFORM

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Abstract

The main purpose of this paper is to analyze the efficiency of the measures taken by different governments to improve the existing flaws of the financial regulations in order to prevent the repetition of the economic crisis we could witness recently and which might have led to a catastrophe. Special emphasis in this research is made on the banking sector as in the existing market exactly banks as the institutions on whom the sustainability of the financial flows depends play the most prominent role among all other financial institutions. Judging by the most recent developments in the world economy it is the financial market that to larger extent determines the economic trends. By considering in this paper the role of the banking sector (the integral part of the financial market) in support of a stable economic environment, authors investigate the true reason of the financial turmoil and analyze the blame for it put on the banking institutions. The perspectives of the development of the financial market in general and of the banking sector in particular are explored, the presumable effects of different institutional financial reforms on the economic environment are researched. This work can be quite useful for understanding of the true origin of the financial crisis, the real role of the banks during the recent events and the nature and the purpose of the steps that are taken by governments - not only from the economic but also from the political point of view.

Key words: banking sector, banks, financial crisis, financial reform

Introduction

It is widely recognized that the financial system performing a set of functions in the economy has an active impact on it. So does the banking sector as its integral part. And it is exactly the widest range of functions performed by banks that determines the fault which laid on these institutions in the context of the recent global financial crisis. Indeed, the banks are one of the main factors of the financial market stability.

It was an overheated demand of banks (especially investment banks) and other financial market participants for the mortgage securities incorrectly assessed by rating agencies as a highest paper-class AAA, as well as an extremely illiterate policy of risk differentiation by some banks, that led to the mortgage crisis of 2007 - 2008.

In response to the incident at the first summit of the Great Twenty in Washington, held on November 14-15, 2008, the decision on the need of global financial reform, which would have a direct effect on the banking sector, was made. Later the ideas of financial architecture reformation were developed at 2 subsequent summits of the Great Twenty in London (01.04.2009), and then in Pittsburgh (24-25.09.2009).

In the recent past both the EU and the U.S. authorities published their preliminary programs of financial reforms. Let us analyze and compare their basic provisions.

1. The EU financial reform

The draft of the EU reform implicitly touches on many important issues, with an emphasis on the creation of 2 major regulatory bodies:

1. The European Systemic Risk Board, which includes the Central banks of the EU and national supervisors. The Board will be engaged in monitoring the overall financial system and inform the European Commission of any, even minor signs of an impending crisis, and the existence of systemic risks. However, its powers will be limited to recommendations only. A significant disadvantage of this regulatory body is that monitoring of risks is limited to the territory of the EU, while the risk zone may be located outside it. Obviously, taking into consideration of the nature and the structure of portfolios of the major players in the financial market, which could not long have been placed into the narrow territory of the EU, the effectiveness of this body will be quite low.

2. The European System of Financial Supervisors will unify a network of national financial supervisors, as well as...
three new pan-European agencies on monitoring the financial market that will be created on the basis of the European Banking Authority (EBA), the European Insurance and Occupational Pensions Authority (EIOPA) and the European Securities and Markets Authority (ESMA). This group will exercise control over the implementation of pan-European banking procedures, as well as the adoption of emergency anti-crisis measures, act as an arbitrator in disputes between national supervisors, have the opportunity to request information directly from European companies, make its projects on financial regulation. Significantly, this group will also have the powers to direct observation and control over the activity of rating agencies. Thus, the financial monitoring agencies will be able to conduct their own investigation and ongoing monitoring of the financial market at the micro level. But the problem is that here the volume of made decisions will be advisory in nature, and the system of financial supervisors will become, in fact, a network to gather information only. Moreover, it is difficult to imagine how it will be possible to carry out constant monitoring of all financial market participants (it is physically challenging), while selective control, which is assumed in the draft reform, clearly will not be sufficiently effective.

The future of the EU financial reform is uncertain. In autumn 2009 the conference within the EU Central bank, at which the representatives of Hungary and Ireland officially declared that the intention to unite the bodies of control over different sectors of the financial market, in their opinion, was erroneous, took place. The authorities of Poland, England, Austria and Germany have similar views. Thus, the financial reform, inevitably, encountered instinctive fear of the EU member states to give their power and leverage over pan-European bodies of control over the financial sector.

Besides, the creation of supervisory bodies does not solve the problems of the financial system structure, does not diminish the willingness of its participants (including banks) to take excessive risks in pursuit of excess profits.

What is more, a few suggestions, still coming from the representatives of various EU countries, are very unconstructive and rejected by the majority members of the EU (for example, the proposal of the Prime Minister of Great Britain to introduce a Tobin tax on financial transactions - in particular, on banking - to counter speculations in the financial market, is more like a fire in the air, because in the economic circles the opinion of its inefficiency has long been ingrained). Thus, the reform proposed by the EU, does not address specific problems, as a result of which the financial crisis emerged, does not offer effective solutions to them - largely because of the lack of consensus among the EU members. Moreover, it almost does not address the problems of banks.

2. The US financial reform

The financial reform proposed by the Ministry of Finance in the United States of America is much richer in specific, substantive proposals, and is a well-structured plan of action; it differs from the European Reform in that many of its proposals involve changing the regulation standards on the financial market. Its minimum officially declared objectives are:

- to reach a new level of protection for consumers and investors;
- to create more stable, secure financial system, less prone to crises;
- to protect American taxpayers from the necessity to „pay“ for struggle with future crises themselves.

This reform is based on one main assumption of the existence of systemic risks in the economy, that are the risks associated with the failure of one of the market participants to fulfill their obligations, which leads to impairment of other participants. In fact, the problem of enterprises being „excessively big for the bankruptcy“ is reduced to the concept of systemic risk. In other words, it is assumed that certain enterprises which are very closely related to other market participants in the case of the alleged bankruptcy may lead to hyper terrible consequences for the very economic system, so their salvation is self-evident to the state. That is what happened when the state actually saved from the bankruptcy the largest U.S. insurance corporation „AIG“, Bear Stearns investment bank, and it is confirmed when the bankruptcy of Lehman Brothers investment
bank (which the U.S. authorities allowed to occur) had nearly resulted in the total collapse of the U.S. financial market. To minimize such risks within this reform it is proposed to increase the capital requirements, make the requirements for leverage (financial leverage) more severe, set strict rules on risk management, give regulatory bodies of the financial market the opportunity to divide the corporations having hyper size and over-complex internal structure into a few companies to eliminate the excess risk of financial stability of the United States. It is also planned to compel corporations being a significant systemic risk carriers to make the so-called „funeral plans”, i.e. plans, based on which the procedure of bankruptcy will be performed and which will allow the state to minimize losses and quickly take control over the bankrupt corporation in its own hands.

Significant changes are planned to be implemented in the off-exchange derivatives market, as at the end of June 2008 the total volume of this market for all types of derivative securities reached 683.7 trillion dollars.

Putting to blame this lack of transparency in this market (currently trading in off-exchange derivatives are virtually recorded nowhere, without going through the clearing system, having the nature of private contracts), the U.S. authorities made a proposal about the mandatory clearing of all transactions in derivatives trading. No doubt, the overheated speculative demand for derivatives and the lack of a reasonable approach to forming their portfolio of assets among the most financial market participants caused the financial crisis, and low transparency and lack of data on this market limited the opportunity of investors, and states soberly assessed the risks, but the very physical possibility of the clearing of assets worth hundreds of trillions of dollars arouses doubts. Besides the mandatory clearing will only give information about who are the direct participants in this market, and more detailed data about its size, but it definitely won’t reduce the trade in derivatives considering its high cost, and what is more evaluation of the market structure because of its volume will be quite relative.

The U.S. Financial reform envisages the creation of Consumer Financial Protection Agency, which would supervise honoring the rights of financial institutions’ customers. Although this proposal is not central, it is very sober and will help solve the existing problem of customer insecurity before financial giants, including banks.

Specifically in the banking sector this reform involves the following:

1. all the above listed changes, because they are directly related to banks, influencing the environment in which they operate;
2. elimination of „holes” in the legislation which allows certain subsidiary saving institutions of holding banking companies to avoid „bank” regulation;
3. creation of the National Bank Supervisor, which would combine functions of banking regulation, currently divided between 4 existing financial regulators - the Federal Deposit Insurance Corporation (FDIC), the Office of the Comptroller of the Currency (OCC), the Federal Reserve, and the Office of Thrift Supervision (OTS), which essentially cover the various depository institutions, and would be given additional powers, particularly with regard to increasing access to internal information;
4. increase of capital requirements in proportion to the size of banking institutions, as well as in proportion to risks common in the activities of a bank (the structure of assets portfolio, leverage).

It should be noted that the banking reform of the U.S.A. is particularly rational, because ultimately it will lead to a simplification of the system of supervisors and elimination of loopholes in the legislation that allowed banks, through creation of derivative mortgage securities with the aid of intermediaries (such mortgage companies as Fannie Mae and Freddie Mac), lay the foundations for future crisis.

The fact that this reform implies stricter control over credit rating agencies is of a great importance. It is proposed to create the Office of Credit Ratings, which would have the authority even to withdraw the license of those rating agencies that provided the wrong ratings. The reform envisages the change in methodology of different ratings setting, the use thereof of information provided not only by the company, which activity is assessed, but also data from other sources. In this case, the problem is that an objective assessment of asset quality and success of a company does not re-
quire a simple modification of existing calculation formulas, but a radically new theory, which would include the calculation of the so-called systemic risk, other risks.

Moreover, the situation where banks and other financial market players, when placing an order for ranking of the companies or certain securities, created by them, pay themselves for this service, still remains without solution. Perhaps, one could observe a certain correlation between the payment for these services and the level of rating. To solve this problem a dramatically new rating system is required both in the U.S.A. and around the world at large, for example, the system of state rating agencies, which would be objective to greater extent than private ones, because the state itself (at least in the USA) is extremely interested in realistic indexes of market functioning (to avoid the situation where derivative mortgage securities were assigned AAA rating).

There is another question, which arises to whether it is really worth imposing significant restrictions and deterrent factors upon development of financial institutions. This casts doubt on the very much-popularized idea of systemic risk. In fact, the systemic risk presupposes that the default of one person who has obligations to other persons may provoke them to default and so forth. Thereat the largest banking institutions, which are characterized by the greatest systemic risk, become the scapegoats. However, it should be clear that it is impossible to avoid systemic risk, as the systemic risk is a natural aftermath of a company’s development, its interaction with economic environment, while the link between development of a company and its interdependence with other market participants is inevitable. Reasonably it is possible to fight only the group of risks that can lead to an “initial” bankruptcy, which, in turn, leads to a domino effect, which we observed after the bankruptcy of Lehman Brothers.

Although the actions taken by the state are required in case such “chain of defaults” is launched so that the state could become a buffer for the entire economic sector, after all it is necessary to concentrate the main forces on finding the ways to prevent the circumvention of the legislative regulations by banks and other organizations, as well as finding the way of how to give risk managers of these organizations the opportunity to see the situation on the whole financial market in an undistorted light, and thereat the situation of rating agencies unreliability arises. It is also neglected that risk and asset management, in general, may be performed many times better by bigger banks than smaller banks.

3. The populist disease

Strain generated by the general disquiet of the society provokes many countries of the world to take unwise steps in order to satisfy the lust for blood of their peoples. Thus, the offshore zones, age-old traditions of banking secrecy, and significant bonuses for bank managers have already fallen under the hot hand of governments. Unfortunately the effectiveness of all the actions taken is questionable as all of them do not directly impact the root causes of the crisis, what is more, most of them have got a rather populist nature.

Particular attention should be paid to the tax on banks, whose assets exceed $50 billion, proposed by the President of the U.S.A., Obama, in order to return 117 billion dollars from 700 billion cost of the state anti-crisis program TARP back to taxpayers. This tax has been dubbed „payment of the responsible for the economic crisis” that in some way contradicts the fact that these banks (number of which is about 50) will be subject to the aforementioned tax regardless of whether they used the state aid or not. It indicates that while still being largely supported by the public politicians are ready to do anything to raise additional funds.

Thus it is not a wonder that as recent data from the financial markets show, the financial reform itself (largely due to its populist nature), in fact, has not had any significant impact on condition of the banking sector. Among many banks, despite the crisis, for the period from 2007 till the present day, one could observe the growth. BNP Paribas Bank, the largest bank of the world by assets, has shown growth in its balance sheet by 59% to 2,29 trillion euro (3,5 trillion dollars) since the beginning of 2007, which equals to 117% of the GDP of France. The assets of Barclays bank in London for the same period increased by 55% - to 1,55 trillion pounds (2,6 trillion dollars), which is equivalent to 108% of the GDP of Great Britain. Thereat, it should be remembered that this growth is explained by a significant decrease of interest rates by central banks. Considering
that the EU governments have no right for direct control over the banks, which did not have direct financial assistance, it is clear that such banks as BNP Paribas and Santander are in an advantageous position in relation to its competitors, and use the situation to make new acquisitions.

According to the data of Bloomberg in early 2007, 353 banks of the EU increased their assets, but one should not forget that threat risks increased as well. Surely, there is also the back side of a coin. UBS AG Bank lost 57 billion and received the aid from the Swiss government in the amount of $6 billion. Thus, its assets decreased by 37% since the beginning of economic crisis.

These fluctuations in the banking sector determine 2 next trends. The first of them - this is a departure of some banks from high-risk activities, so to say - a return to roots - to the traditional banking services. This is the way that Morgan Stanley and Citigroup Banks went as a result of a significant damage caused to them by the financial crisis, turning to the commercial retail banking. It is also explained by the fears evoked by the new regulations, which are introduced and will be introduced by the U.S.A. and the EU.

The second trend is opposite to the first one. Such giants as Goldman Sachs, JPMorgan, Barclays, and Credit Suisse do not see a future different from the past, despite the strengthening of capital and leverage requirements. And looking at them, we see growth: in the first quarter of 2009 Goldman Sachs became a record-holder spending 11.4 billion dollars on personnel on the background of significant growth, turning the wrath of the public against itself due to its „wasteful behaviour”.

In fact, the reaction to this was a new, recent draft law proposed by Barack Obama with the support of Paul Volcker, the former head of the Federal Reserve and economic adviser to the President. This reform, called „Volcker’s axe”, consists of 2 key-points:

1. The division of spheres of banking activity. Financial institutions taking deposits that are insured by FDIC State Agency, as well as having an access to emergency funding from the Federal Reserve, will not be able to invest in profitable but risky operations in the market. Banks will not be able to own hedge funds, equity funds, and invest in them, deal in securities from their own resources for their own profit, take part in operations that do not relate to servicing their clients.

2. Limitation of banks size. Under the current rules one American bank cannot control more than 10% of the national market deposits. Upon the adoption of the reform this limit will be applied to other types of financial obligations, including operations in the wholesale financial market.

This reform can be taken in two ways. Clearly, being efficient, it will reduce the risks associated with banking activities to some extent reduce the concentration in the banking industry, where the four largest U.S. banks own more than a half of all assets in the sector. However, by doing so the reform will weaken the position of the U.S. banking sector on the international arena, striking a major blow to such locomotives of financial growth, as Goldman Sachs and Morgan Stanley Banks. It should also be borne in mind that European countries are unlikely to decide to apply such harsh measures against their banks. This will put the U.S. banks in a relatively no-win situation. Moreover, this reform is not aimed at addressing the real causes of the financial crisis, so the USA authorities should be very careful about its enforcement.

Conclusions

At the moment behind the veil of many accusations and threats, deep and not very deep reforms a bright future for the entire banking sector is seen, because, firstly, after a detailed analysis it is revealed that its fault as of the one who had started financial crisis was overestimated. Secondly, it is explained by that portion of the GDP growth of the U.S.A. and the EU, which the banking sector provides them with. The evidence in favor of such assumptions is a very low interest rate, which is supported by central banks around the world and which provokes an extensive growth of banking institutions (though it isn’t going to last for long). It is likely that soon many bold intentions of governments-reformers might be forgotten, and, new investment banks will emerge. This is the main threat.

Even today, according to many experts, the huge programs of stimulating the growth of
the economies in different countries create favorable conditions for the formation of new „bubbles” in the financial market. The rapidly growing mortgage market spurred by the state of China evokes particular concerns. The USA commercial real estate market also arouses great suspicion. It is very likely that soon we might see a repetition of the situation that occurred in the U.S. mortgage market, because the initial conditions are basically very similar.

Summing up, it should be noted that the seeds sown by the financial crisis and subsequent events will be growing for many years. Lower interest rates create favorable conditions for development of banks, and it will be interesting to observe which of them will go what way, unless, of course, some harsh reforms such as Volcker’s rule are enforced as they can radically change the settings. The financial reforms, pursued at the moment, have inherently a negative character, though, probably, their influence on the banking sector will not be too great, especially considering their populist nature. The main danger is that the situation will not change, and the financial crisis (a kind of warning) will be forgotten. It is obvious that in case of a possible repetition of the events of 2007-2008 the world’s leading economies will not have sufficient funds to prevent a possible catastrophe, as evidenced by the growth of government debts around the world. Considering the size of the U.S. public debt, it is frightful to assume possible consequences. The sign of the increasing nervousness were 200 tons of gold acquired by the Central Bank of India from the IMF, obviously, as an insurance against possible exchange rate fluctuations.

Thereby, now the world’s governments bear a tremendous responsibility for the non-distant future of the world financial system (to tell the truth, the recent economic performance doesn’t say much for their efforts), and it is clear that the banking sector will play the key role in it, as it has happened until today, in conditions of the new regulation, or without it.

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ENTREPRENEURSHIP AND CORPORATE SOCIAL RESPONSIBILITY (CASE STUDY)

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Abstract

The concept of corporate social responsibility should be a constant element in the strategy of any organization that wants to be competitive in the market and have a positive image among employees and the environment in which it operates. Functioning in accordance with its rules need to take appropriate action entrepreneurial. It is very important especially in terms of striving for sustainable development and increase public awareness. The Polish companies, especially the wood industry, the idea of social responsibility is, unfortunately, little known and widespread, despite the fact that it achieved through the benefits are significant for both the company and society as a whole. This article aims to present the phenomenon of entrepreneurship and corporate social responsibility in terms of their validity and usefulness in the functioning of the organization.

Key words: timber industry, corporate social responsibility, entrepreneurship, efficiency

Introduction

Nowadays, entrepreneurship is regarded as idea very important for the social and economic development of the world. It is thought that entrepreneurship has strategic meaning for achieving competitiveness in the scale of economy. Entrepreneurship, both in the economic and psycho - sociological meaning, deals with searching and introducing inventive forms of development. In Poland, the intensive development of entrepreneurship occurred in the nineties of the 20th century. In those times, polish society was eager and determinate to make changes in the existing economic reality. Currently, we can observe many progress processes, but still there occur some limitations, which greatly hinder performing of economic activity. Those limitations usually do not allow firms to exploit their full development potential. In long period of time, those limitations can have negative overtone, they can endanger the maintenance of development trends. Law regulations and frequent innovative changes have impact on the phenomenon described above. In most European countries the changes are regarded as a standard. On the other hand, changes can negatively influence the level of competitiveness on the national, European and world market. One of law regulations, which have not been yet performed in Poland, is the corporate social responsibility. A company, in the stage of building its strategy, can freely choose its relation towards social interests, environmental issues or groups of clients. According to survey carried out by firms, the aspect of corporate social responsibility greatly contributes to the level of global competitiveness as well as creates the sustainable social and economic development.

The article characterizes the concept of entrepreneurship and corporate social responsibility.

Furthermore it presents above processes on the example of timber industry company.

The characteristics of entrepreneurship

In polish scientific literature we can find various definitions and concepts of entrepreneurship. Commonly, entrepreneurship can be defined as a set of actions pursuing to found and develop of a new venture [3]. The idea of setting up the venture is to act in order to satisfy the needs, achieve profits and develop a company. The realization of above actions is effective when actions be characterized with creativity, innovativeness, flexibility, being able to make a decision and undertake a risk. The elementary aspect of entrepreneurship is also an individual development of an entity. Therefore, the reason for entrepreneurship is pursuing to achieve effectiveness, which allows the company to develop and function.

In more specific aspect, entrepreneurship can be considered as an analytic category, and can be considered [5]:

- in functional meaning,
- as an entity performing enterprising actions,
- in the aspect of economic bonds tightly connected with the active/adverse balance,
- as a management approach.

In the first grasp, entrepreneurship incorporates the entity’s ability to make use of outside
potential, allows achieving success in all conditions. Therefore, it is connected with the first stage of company’s creation.

The second aspect refers to a person (e.g. company’s owner), who is responsible for undertaking entrepreneurial actions. It can be analyzed from the point of view of performed actions as well as individual features, thanks to which one can become creative and inventive.

The meaning of third aspect is tightly correlated with company’s policy in the field of taking advantage of new opportunities by making fast and accurate decisions. Frequently, those decisions are burdened with risk, and competitive firms do not want to make such decisions. It concerns also the ability to start a new company, and promotion of it is connected with more general concept of entrepreneurship.

The last dimension of entrepreneurship is being realized due to established and accepted method of management in organization, and its characteristic feature is innovativeness.

The concept of entrepreneurship can be also considered from the point of view of function that it fulfils in the economic system. The most common functions of the entrepreneurship are:

− opportunity to use better possessed resources (especially knowledge),
− faster reaction in new situation due to identification of new possibilities,
− creation and control of novelties,
− flexible adaptation of a market offers into the existing changes,
− protection of big companies against making mistakes.

It is worth underlining that entrepreneurship is both a feature of an individual as well as of entire company. It means that ideas are realized by single person or small group of employees, from the very beginning until the end. Usually, it is connected with occurring of particular factors (e.g. qualifications, abilities and flexibility in acting), upon which the success of innovative idea depends.

According to Peter Drucker, entrepreneurship does not have a natural and spontaneous character; it is rather conscious work with the use of knowledge, qualifications and experience [4]. The features of enterprising companies are correspondent to those of learning companies, where knowledge of superiors and inferiors are the key features.

Entrepreneurship is profitable phenomenon not only for the employees or the company, but also for society, which stems from the obtained effects. Among which, one can mention – stimulation of the company to develop and introduce changes in the functioning of the firm, economic growth, better quality of products, increase in efficiency of work, arousal of competitiveness on the market and formation of new technologies.

Types of entrepreneurship

Characteristic feature of companies which are focused on achieving success on national and international markets is performing actions in accordance with overall strategy of management. The effects of above mentioned actions can be seen in different aspects of economic and social life.

In economic theory, many forms of entrepreneurship are distinguished. Their usage in practice depends on existing situation. Among them, the most common are [8]:

− individual entrepreneurship,
− small-business entrepreneurship,
− entrepreneurship of economic organized systems,
− entrepreneurship in local and government administration,
− entrepreneurship in sector of social organizations,
− international entrepreneurship.

Entrepreneurship is a key feature of action undertaken by an individual, however some persons are more successful and some are less. The effects of that can be seen in actions performed in particular organizations. Thanks to them, companies could quickly react on changes occurring on the market. Those changes have significant influence over further development and functioning of the company.

Corporate Social Responsibility

The idea of corporate social responsibility (CRS), also known as social responsible business), is a concept commonly known in the world and responsible business has become a global phenomenon. Its doctrine dates back to 1899. It was created on the basis of two principles: philanthropy and trust that promoted general obligation of business towards the society. The theory of stakeholders had also fundamental influence over corporate social responsibility, assuming tight correlation among entities, which determine company’s activity at the same time being dependant from each other.
Modern meaning of corporate social responsibility for the first time appeared in United States in the sixties, and then in the middle of nineties in Europe. In Polish companies it is still hardly known and disseminated.

The main assumption of CRS concept is the fact that company functions as a coherent member of society. "CRS can be defined as a conception, thanks to which companies are integrating with social and environmental aspects of day-to-day activities and together with stakeholders on the basis of voluntariness" [11]. According to European Commission, social responsibility is a voluntary acceptance of social and ecological issues, that are not obligatory to national law or do not stem from any agreement.

Therefore, it is a concept, which mobilizes companies from the early stage of their existence, to define stable and clear relations among employees, clients, investors and local community. Responsibility in this aspect is based on the assumption that [1]:

- organization has relations with stakeholders, who at the same time decide about its functioning and are dependent on the organization,
- analysis of those relation is considered from the point of view of organization benefits and stakeholders' benefits,
- every stakeholder pursue to maximize own benefits,
- decisions have preferential character.

It is important to remember, that responsibility is not based only on realization of necessary demands but most of all it depends on development and taking care of human resources and creation of positive relation with the company's environment, since those elements decide about its value.

The impact of company over natural environment plays also an important role.

Business social responsibility performs double role, on the one hand it is assumed that corporations should bear responsibility for their actions regardless of their positive or negative character, and on the other hand it is assumed that crucial element of corporate functioning is fulfilling the needs of stakeholders. Therefore, social responsibility should be a plan, which realization is useful and treated as a long-term investment, not as the expenses.

Very important aspect for the companies that want to follow and function according to CRS concept is proper choice of its form and appeasing conflicts among them proper to given situation. Emerging conflicts and misunderstanding usually stem from contradiction between organization and stakeholders' interests.

<table>
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<tr>
<th><strong>EXTERNAL</strong></th>
<th><strong>INTERNAL</strong></th>
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<tr>
<td>natural environment (saving energy, reduction of pollution above the normal standards)</td>
<td>employees welfare (health care, severance pay, sick leave)</td>
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<tr>
<td>products (survey of negative situation stemming from inappropriate use of foods by the customers)</td>
<td>working conditions (supplementary benefits above the standard)</td>
</tr>
<tr>
<td>market and marketing (advertising standards and lack of demand on certain markets)</td>
<td>projecting of employee’s duty (emphasis put on satisfaction of employees not on the economic effectiveness)</td>
</tr>
<tr>
<td>suppliers (fair commercial rules and black list of suppliers)</td>
<td>activity upon local community (e.g. financial aid for local initiatives)</td>
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<tr>
<td>employment (e.g. maintenance of employment)</td>
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<td>activity upon local community (e.g. financial aid for local initiatives)</td>
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Source: A. Lewicka-Strzalecka, Etyczne standardy firm i pracowników, IFiS PAN, Warszawa 1999, p. 57

In the scientific literature there are many pros and cons towards corporate social responsibility. Negative attitude towards the idea of Corporate Social Responsibility usually stems from the fact that companies are concentrated on achieving profits and their functioning is not conditioned on moral aspects. Therefore, it is a mistake to burden the entrepreneurs with social responsibilities. The supporters of this attitude opine that economic and social targets are mutually exclusive, and their coexistence is not possible. Moreover, it is assumed that actions undertaken by the entrepreneurs in the field of social responsibility are not deliberate, since often they result from positive interaction between profit and social welfare. Arguments for the corporate social responsibility are strictly correlated with the theory of social consent where the priority is assumption that resources belong to society and an organization can be founded only when soci-
The positive aspect of the above theory is also the fact that companies have moral status, since they create social structure on the basis of features and retaining of human resources and their functioning is focused on achieving earlier approved goals.

### Table 2. Basic pros and cons for corporate social responsibility

<table>
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<th>PROS</th>
<th>CONS</th>
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<tr>
<td>− problems are generated by economic activity</td>
<td>− the main goal of running business activity is to generate profits</td>
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<tr>
<td>− there are different types of organization that are part of social groups, and all of them administer various resources to solve social problems</td>
<td>− companies involvement in social programmes helps them to influence the society that is not always positive</td>
</tr>
<tr>
<td>− companies besides the government and society are also partners in economy</td>
<td>− there is a possibility of clash of business among the stakeholders</td>
</tr>
<tr>
<td></td>
<td>− the entrepreneurs do not possess required qualifications in order to run the social programmes</td>
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Implementation of corporate social responsibility concept is a long-term process, and its effectiveness is determined by various factors. The main factors, beside the law regulation, are following: specific procedures and directives (e.g. the directives of ODCE for multinational entrepreneurs, the system of social responsibility business according to Social Venture Network, the SA8000 norm and Green Book), thanks to which companies are considering and taking into account the needs of all stakeholders.

### The models of company’s involvement into social responsibility

Undertaking actions in order to function according to principles of Corporate Social Responsibility, requires applying appropriate model, which clearly characterizes the forms of involvement. Scientific literature distinguishes two fundamental models [10]:

1. after profit obligation,
2. before profit obligation.

The first of them accepts four levels of company’s responsibility: economic, legal, ethical and philanthropic. Particular types of responsibilities are eligible, expected or required by the society. The lowest in the hierarchy, but the most important level from the point of economic view means that the company wishing to function following social responsibility rules does not suppose to bring loss; in any case its action will not bring desired effects. It is required by the society. Its reflection might be making right strategic decisions by the company. Satisfying the requirements of that level is a starting point to other levels, which proves that economic level has fundamental meaning. The second level – legal is an obligatory one, since companies trying to achieve profits have to obey the law (e.g. anti-corrupt law, protection of consumer’s rights). Two last levels are connected with voluntary involvement of company and presents social responsibility in narrower meaning. The ethical level is well expected by the community. It assumed that undertaken actions should be appropriate in given situation, and used methods should be fair and square (e.g. avoiding inappropriate behaviour).

Philanthropic level comprises the area of actions by which the company is positively perceived by the society. This level is mostly required by the community (e.g. transferring money for charity, engagement in programmes supporting education of children from local community).

The second model presumes that the most important value in creating the rules of social responsibility is ethics. It is based on three assumptions [10]:

1. Society is not a group of single entities, but social structures that depend on each other.
2. Obligation of each organization is to respect ethical and social prohibitions and orders.
3. Worth existing are only those firms which act according to social expectations in moral sense. Moreover only those firms that perform important role in shaping social and economic order have a right to function.

In both models, entrepreneurial actions are very required as they support the realization of overall plan.
The level of CRS implementation in polish timber industry

The level of company’s involvement into social responsibility is subjected to many factors. The most frequent ones are: size of the company, capital resources, human resources and natural resources, stakeholders, cultural traditions and ecological and social environment in which the company is acting.

In Poland, the level of knowledge about corporate social responsibility despite the many activities undertaken by various institutions (e.g., Responsible Business Forum) is still unsatisfactory. This is due to low awareness of Polish entrepreneurs that business must play an active and positive role. Therefore it is important to education and promotion of corporate social responsibility. Good knowledge of CRS principles is characterized only for large concerns usually with foreign capital.

Small and medium companies rather occasionally undertake the social actions, because entrepreneurs consider that to be unprofitable. This attitude is inappropriate, since the costs of taking part in social actions will not reimburse immediately, but it can bring many various profits in long term period of time. Among basic ones we can distinguish the following:

− increase of motivation and engagement of employees
− higher level of organizational culture
− increase of effectiveness in performing entrepreneurial activities
− positive image of company
− increase of investors’ interests
− better competitiveness on national and international market
− acquiring new clients and intensifying feeling of loyalty.

The society and economy also derive significant profits from applying CRS idea by national companies. The most important are: improvement of working conditions and living conditions, improvement of natural environment, development of human resources that are main resources of economy, respect for human rights, aid in solving crucial social problems [2].

Guidance programme examining the level of applying CRS idea by polish entrepreneurs was carried out in September 2009 in selected companies from timber industry in Opole region. Only one in fifteen companies that was bought by foreign corporation in 2006 is performing various actions in the field of the idea of social responsibility. Managers and personnel staff, thanks to appropriate trainings and good information flow perfectly realise the benefits and positive aspects of Corporate Social Responsibility. The great influence in that particular case had the experience of foreign investor who has been running other companies following the idea of CRS for many years. Moreover, that company is still undertaking various social actions (it supports local ventures – such as financial aid for local sport tournaments), which are a part of its strategy. In the other companies that were surveyed, the managers focused only on achieving financial profits. In that particular cases the knowledge and understanding of the idea of corporate social responsibility is rather insignificant (more than 77% of respondents never heard about the idea of CRS). Most employers associate the CRS with unexpected and additional costs. However for the employees the idea of CRS is something incomprehensible and therefore unnecessary in the work environment. Only five out of sixteen surveyed companies are taking part in social actions by donating small sums of money for sport tournaments or cultural events. Unfortunately, these are only single cases. Therefore, it can be assumed that entrepreneurial actions in polish companies are on the low level and do not respond to the needs.

Conclusions

Nowadays, undertaking entrepreneurial actions is an integral element of each organization that wants to be reckoned on national and international markets. Organizations, thanks to creating entrepreneurial attitudes are more flexible and more often undertake new challenges. One of these challenges is to function according to the concept of Corporate Social Responsibility. The accurate realization of that idea helps to achieve success, most of all by cooperation with surroundning, taking care of human resources and natural environment. Consequently, it generates more benefits for the organization and surroundings. It is also worth underlining that organizations that follow the idea of CRS can count on the governmental support such as: lowering the taxes or subsides.

Social responsibility is becoming synonymous with the operation of a rational and enterprising. Undertaking these actions is integrally connected with the competitiveness require-
ments of market and with the growth of social awareness.
Therefore it is extremely important for the organization to know how to acquire enterpre-
neurial competences, introduce innovation and recreate its profile into more flexible and dy-
namic. The important factors are also trainings of managers in the field of CRS, exchanging of ex-
periences and conducting social campaigns.

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KNOWLEDGE SOCIETY AND SUSTAINABLE DEVELOPMENT

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Abstract

Knowledge society is a society where knowledge is a major creative force. In knowledge society all spheres of human life depend on ability of people to create, distribute and share knowledge. Development of knowledge society initiated big economic, social and cultural changes. Among others huge interconnectedness of national economies, internationalization of life, growing importance of work and local communities, growing importance of knowledge workers can be mentioned. Knowledge society offers new views and approaches to sustainable development. Our knowledge society is not the first knowledge society of this type in the history. K. E. Sveiby and T. Skuthorpe describe a knowledge society developed by the Aboriginal people Nhunggabarra in their book Treading Lightly. Nhunggabarra created a knowledge society based on intense work with the knowledge that as historians and anthropologists suspect lasted and prospered for thousands of years. The article discusses the lesson learned from Nhunggabarra society and its potential for our reality, our knowledge society and sustainable development.

Key words: knowledge, tacit knowledge, explicit knowledge, knowledge society, sustainable development

Knowledge Society

Knowledge society is a society where knowledge is a major creative force. In knowledge society all spheres of human life depend on ability of people to create, distribute and share knowledge. Development of knowledge society initiated big economic, social and cultural changes. Among others huge interconnectedness of national economies, internationalization of life, growing importance of work and local communities, growing importance of knowledge workers can be mentioned. Knowledge society offers new views on all aspects of society, economy and development including. It also requires new approach to these factors.

Industrial society that many of us still remember measured success by growth. The growth extensive or intensive was often achieved on account of interests of somebody else, another individual, organization, country, nation or the environment. The growth, success and victory of one often caused the loss of the other.

Important factor of knowledge society is its enormous interconnectedness. Global systems respond quickly to incentives and aftereffects of bad decisions hit back the decision maker in very short period. Current economic crisis serves as a good example. Of course knowledge society offers potential for growth. But growth in traditional extensive meaning, e.g. the more, the faster the better, quickly hits its limits. Intensive growth based on higher levels of innovations is more promising but it is also limited by ability to invent and innovate on the side of the supplier and ability to accept new inventions and innovations on the side of the customer.

Due to interconnectedness of everything, global competition and cooperation and knowledge being the major creative force, the factor of growing importance in knowledge society is sustainability.

Our knowledge society is not the first knowledge society in the history. K. E. Sveiby and T. Skuthorpe [7] describe a knowledge society developed by the Aboriginal people Nhunggabarra in their book Treading Lightly. Nhunggabarra created a knowledge society based on intense work with the knowledge that as historians and anthropologists suspect lasted and prospered for thousands of years. The lesson learned from Nhunggabarra society may help us to avoid many mistakes and disappointments.

Knowledge society can meet the requirement of sustainability only when certain premises are met. Among that most important, adequate work with both dimensions of knowledge, proper knowledge management, principles of learning organization, double-loop learning and principle of cooperation should be mentioned.

Knowledge Society and Knowledge

Major creative force of knowledge society is knowledge. Knowledge can be defined as a changing system with interactions among experience, skills, facts, relations, values, thinking process and meanings. It consists of two dimensions, explicit and tacit. Explicit dimension of knowledge is actually information. It can be expressed in formal and systematic language and
can be shared in the form of data, scientific formulae, specifications, manuals. Tacit dimension of knowledge is highly personal and hard to discover and formalize. Explicit knowledge and intuition, mental models, experience, crafts, skills, etc. create it. It is deeply rooted in action, procedures, routines, commitment, ideas, value and emotions. It is difficult to share and communicate [3]. Both tacit and explicit dimensions of knowledge are important in knowledge society. Explicit dimension is usually present in the form of data in some informational system; tacit dimension is in heads of employees [3].

Information and communication technologies we have at disposal these days offer tools for work with both dimensions of knowledge, explicit knowledge (information) and tacit knowledge. Our technology allows us to work with knowledge in complex and systemic way.

Knowledge as a major creative force of knowledge society can be fully exploited only if proper knowledge management is introduced. Knowledge management optimizes the flow, creation and exploitation of knowledge in organization and society. It must cover both explicit and tacit knowledge in relation to specific needs of organization or society and in relation to their culture, principles and habits.

As available resources (finances, human, and material) are usually limited, organizations try to specify their knowledge needs and decide between two basic knowledge strategies, strategy oriented on explicit knowledge or strategy oriented on tacit knowledge [2]. Of course the less dominant dimension of knowledge should not be forgotten.

Organizations that focus more on explicit knowledge are organizations with standardized processes and procedures. Their products and services are stable; customers do not require specialized solutions. Such companies create wide, high quality and reliable databases which allow the storing, generation, adapting and combining of huge volumes of explicit knowledge transformed to data. Such databases also allow creating statistics and various types of analyses. The reuse of knowledge saves work and reduces communication costs. We call such organizations database users.

Database users work mostly with explicit knowledge. This fact influences the profile of their human resources. Such company tends to hire people who finished a middle level of education or new university graduates. The major requirement on people is the ability to work with databases and the ability to generate data from the database and to adapt them as required at the moment. People are rewarded for contribution to the company document database. Highly expert knowledge and creativity are not required. The strategy oriented on explicit knowledge is called a codification strategy [2].

Organizations that focus more on tacit knowledge provide solutions of special unique problems, high level advice and expert solutions. For such organization, databases have only the supportive role. Sharing of the tacit dimension of the knowledge happens through face to face contact or in special electronic environment (for example Second Life).

Human resources are top educated specialists and experts who often work only part-time for the organization. The most important asset is the knowledge owned by those experts. The company tries to provide experts with space and culture that supports the exchange and sharing of their tacit knowledge and develop human networks. Expert teams are part-time teams and are rewarded for knowledge sharing. The strategy oriented on tacit knowledge is called a personalization strategy [2].

Knowledge Society and a Learning Organization

Knowledge society can be sustainable only when the society and its parts behave as a learning organization. The term learning organization is linked with name Peter Senge who identified and defined its five aspects in his famous book The Fifth Discipline [6].

Learning organization is an organization that works on similar principles as a living organism. As any living organism, learning organization is created from various parts. They are linked together with relations and bonds. Together all parts and relations create a bigger whole, a complex system. The difference between a learning organization and organization that does not learn is following:

- Learning organization can monitor its external and internal environment.
- Learning organization understands underlying principles of environmental dynamic.
- Learning organization can use these principles to address and initiate changes.

Five basic principles of learning organization are:
− Personal mastery;
− Mental models;
− Shared vision;
− Team learning;
− System thinking [6].

Personal mastery is the ability of individuals to learn and develop. It is influenced by their personal visions and objectives. Individual learning is basic prerequisite of organizational learning. Organization as a whole cannot learn unless its employees learn as individuals. Knowledge society cannot learn unless its members learn as individuals.

Mental models are unconscious deeply rooted personal images that influence how we understand reality and respond to external and internal incentives. They highly influence our behavior and our ability to learn. They can limit but also accelerate individual and organizational learning and learning of the whole society. Peter Senge offers advice how to identify and eliminate them in his book.

Shared vision is a vision about future development of organization shared by employees. It is a torch that ignites the light on the way to future. Fully accepted shared vision motivates employees. Shared vision also can support or limit learning of individuals and the organization.

Team learning represents interaction of individuals and teams and leads to acceleration of organizational learning. Team learning is based on similar principles as individual learning but requires, in addition, environment of trust and good relations among employees.

System thinking explains basic principles and two types of feedback that create system dynamics. It helps to analyze events around us and identify their essence. It is a basic prerequisite of so called double loop learning, important characteristics of learning organization [6].

Senge’s five disciplines are a toolset of modern learning organization and knowledge society. System thinking enables the organization to understand its external and internal environment and its dynamics. Personal mastery, work mental models, shared vision and team learning initiate learning process necessary to address changes.

Knowledge Society and Double Loop Learning

Learning can be viewed as a use, creation and transformation of knowledge. Quantity and quality of explicit and tacit knowledge that is at disposal at the moment of learning and ability of individual or organization to use it and transform it influence success and failure in learning activities.

Development can be sustainable, only when systemic approach to knowledge is adopted. So called double loop learning, helps to identify complex relations structures of our environment. The cycle of monitoring, understanding, and responding (changing) is foundation of double loop organizational learning.

Argyris and Schön in their book „Organizational learning: A theory of action perspective“ [1] define two types of learning, single and double loop learning. By them, learning is a process of detection and correction of mistakes.

<table>
<thead>
<tr>
<th>Incentive</th>
<th>Response</th>
<th>Results</th>
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**Double-loop learning**

**Fig. 1. Types of learning**

Single loop learning is learning by trial and mistake. Individual or organizations do something, e.g. respond to some incentive. This response leads to certain effects. If the effect differs from what was expected, individual/organization adjusts the response. This process of trials and mistakes may lead to expected results. Whether the individual or organization achieves their objectives is accidental.

Double loop learning starts similarly to the single loop learning. Individual or organizations search solution of some problem. But prior to acting they make analysis of the problem and its surrounding. They tailor their response to results of the analysis, e.g. the nub of the problem. The response is not accidental. In case the effect differs from what was expected, before responding back, they try to find the reason of failure through better analysis.

Double loop learning enables to identify nature of world around us and leads to better results than single loop learning.

Knowledge society and Cooperation

Industrial society was based on the doctrine that the one who is better wins and the one, who is less good, looses. E.g. it was based on the doctrine of competition. Cooperation was
understood either as a weakness or as a thread (for example trusts are illegal in many countries). From the point of view of theory of games, win-loss strategy was preferred.

Theory of games models potential of competitive and cooperative strategies. In so called prisoner’s dilemma two parties solve fix difficult situation. They (individual or groups) must decide how to behave without knowing the strategy of the other party. The model situation shows two men who committed the crime. The proofs are not conclusive and the police needs one of the arrested to confess. The prisoners have two basic strategies - co-operate or compete at disposal. Two strategies result in four possible outcomes.

- win – win;
- win – loose;
- loose – win;
- loose – loose.

When both prisoners decide for the competitive strategy, e.g. both blame the crime on the other men, both will be arrested. This dominant egoistic strategy outcome is loose – loose. When one prisoner decides for competitive strategy and the other for the cooperative, the one who competed will be released and the one who cooperated will be imprisoned. Only the fourth strategy a cooperative one, leads to success of both parties. If both prisoners decide not to tell anything, both will be released because of lack of the proofs.

As for the results of the situation (from the point of view of players, e.g. arrested men), the worst strategy is the one when both compete. The strategy in which one of prisoners cooperates leads to better results, because only one of game participants will be arrested. The cooperative strategy leads to the best result – both men are free.

In different cultures and different periods of human development, people preferred different strategies. For example, The Old Testament „Tooth for tooth, eye for eye” was a most effective strategy in the eastern civilisation for very long time. Later on Jesus came with more cooperative strategy: „If someone slaps you on your right cheek, turn your other cheek to him as well”. Since Axelrod experiment (1980) the strategy when the certain type of behaviour is copied by the same behaviour, e.g. competition with competition, cooperation with cooperation was recommended.

Industrial society could work well on competitive strategies because it was less complex than our current reality. There was usually one, who was stronger than others and won. Competitive strategy often led to relatively long competitive advantage. Of course, in case of similarly strong partners the competition may have led to withdrawal of one or damage of both.

Knowledge society works on different rules. Major asset of knowledge society, knowledge is of intangible character. It is hidden in heads of people and can be used only when they cooperate. Huge interconnectedness and high speed of our world work against competitive strategies, the revenge may come much earlier and advantages last for shorter time. In the world jammed with information and buzz, misinterpretations of signals are quite common. Competitive revenge strategy may be very dangerous in such conditions. When this happens, the spiral of revenges even though based on misunderstandings leads to extremely bad results. That is why more merciful strategy (e.g. cooperation as a response to competition) is often more efficient and it is highly recommended these days.

Nhunggabarra Knowledge Sustainable Society

K. E. Sveiby and T. Skuthorpe in their book Treading Lightly [7] describe knowledge society developed by the Aboriginal people Nhunggabarra. Nhunggabarra lived on the border of south Queensland and northwest New South Wales. Their name was deduced from the name of the tree common in their area and covered few communities with common culture and similar language. Nhunggabarra created knowledge society based on intense work with knowledge that as historians and anthropologists suspect lasted and prospered for thousands years.

From what we know about Nhunggabarra communities, they developed and used all five factors P. Senge finds as crucial for learning organization. All Nhunggabarra people shared one vision, they have sophisticated system of development of personal mastery, and they actively worked with mental models and preferred community (team) work. As for system thinking their knowledge about their environment and interrelations between things, people, nature and the whole social and environmental system was so deep that their society sustained for very long time. They also had extraordinary system of sharing knowledge.
Nhunggabarrra shared one very strong vision which influenced the behavior of all communities and individuals. The vision was: „Keep all alive“. Nhunggabarrra fell responsible for their world, plants, animals, environment and for community members and their well being. They behaved as good gardeners and game keepers and kept their fragile environment in balance.

Personal mastery and development were linked to shared vision. Every Nhunggabarrra men and women had clear social and environmental responsibilities. These responsibilities were inherited and made borders of what one could and could not do. The community paid huge attention to personal development of individual in his/her given field. They used various tools to share knowledge – learning by doing, observation and stories. As every of adults owned knowledge that was important for survival of others, all members of Nhunggabarrra society were credited as important knowledge workers. All people had the same importance for the society, nobody was more important than others which prevented the rise of hierarchies and supported flat and equal structures.

The Nhunggabarrra society paid great attention to mental images and creation of proper models of behavior that built the foundation of their system. Young men were obliged to leave birth place in early age and live with related communities who were responsible for their further education. Marriages were planned and young people from different communities were purposefully mixed. This system made young men busy during their most aggressive years and interlinked individual Nhunggabarrra communities so much that any idea of war was absolutely unacceptable. Nhunggabarrra shared their mental images through stories. Stories they told had four levels. The first level was explicit and explained natural features and animal behaviors. The second level explained relationships between people in the community, the third level relationship between the community and larger environment and the fourth one the spiritual knowledge. Higher levels were more tacit and they required special knowledge to be understood. They were available only for chosen and specially trained people. Anyway, the ownership of exclusive knowledge did not lead to higher social status.

Nhunggabarrra lived, worked and acted in communities. The interest of community was prior to the interest of individual. All groups of Nhunggabarrra met regularly to share their knowledge and special tools were prepared to eliminate conflicts.

Deep knowledge of environment, sense for interconnectedness of everything that happens and awareness of principles of system dynamics helped Nhunggabarrra to build sustainable knowledge society.

**Fall of Nhunggabarrra Knowledge Society**

Even though Nhunggabarrra system was very sophisticated and worked well for very long time, the society disappeared. Over dependence on tacit knowledge is blamed for the end of Nhunggabarrra flourishing society.

Nhunggabarrra had special way of storing and sharing knowledge. As mentioned above, every men and women was responsible for certain knowledge or its part and had clear social and environmental responsibilities, Nhunggabarrra had excellent educational system that used apprenticeship and storytelling. Being fully aware of fragility of human being, they backed their knowledge workers. When the person who owned certain knowledge died, there were always other people who had the same knowledge and same type of responsibility. Knowledge doubling and perfect health of the population led Nhunggabarrra people to confidence that the system was protected against loss of knowledge. They developed something like a script but they used it only for some special pieces of knowledge, everything else was stored in tacit form.

Unfortunately this backing system, fully dependent on tacit knowledge, totally failed during the severe smallpox epidemic that hit Nhunggabarrra people sometime around 1829-1831. Too many people died in very short period and it led to huge loses of knowledge. Loses in knowledge led to total confusion of those who survived because they suddenly missed important guidelines how to act and behave. The sustainable knowledge society disappeared.

**Conclusions**

Nhunggabarrra story shows that people can build sustainable knowledge society. It also shows that such society can last for very long time when supported by convenient style of work with knowledge. It also shows that knowledge society can diminish quickly if work with knowledge fails to address unexpected changes.

This is the reason why organizations and whole society are highly advised to pay attention
to both dimensions of knowledge. Too much focus on tacit knowledge leads to dependence on its owners, humans, too much focus on explicit knowledge leads to loss of important knowledge dimension.

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SUSTAINABILITY EDUCATION: WHAT ON EARTH ARE WE DOING?

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Abstract

The paper’s title is reflective of the pressing necessity to make a strong stance about the need to examine the challenges in teaching sustainability. As an academic subject, sustainability is unique, and very different from most other disciplines for a range of reasons. It requires transdisciplinarity, urgency and immediate response to pressing needs for practical change; the application of its concepts, such as equity, diversity, locality and bioregionalism are universal all-encompassing and broad-based. Flexibility and sophistication are equally required in teaching, learning and application; the teachers and learners are both all the time and need to work jointly during the education process. Different approaches, such as eco-pedagogy, environmental education, UNESCO’s education for sustainable development, participatory education and humane education, and their value are discussed before outlining humanistic sustainability education as the approach taken in teaching a Masters course in Sustainability Studies at Curtin University. Despite being a postgraduate course, the participating students are at “entry level” in terms sustainability, with no previous foundation in the discipline, but with their hearts in the right place. The paper presents case studies and describes the achievements of several of these students. It makes the case that even though there is a crucial need for leadership in the sustainability agenda, it is not the individual but the collective work that counts. It concludes that challenging the dominant paradigms, cultural norms and local, national and international politics required to mainstream sustainability, starts from examining „what on Earth I am doing”.

Key words: Australia, case study, humanistic sustainability education, practical change, sustainable development, transdisciplinarity

Introduction

“For the very first time the young are seeing history being made before it is censored by their elders... We are now at a point where we must educate our children in what no one knew yesterday, and prepare our schools for what no one knows yet...”. Margaret Mead (1928)

We all now know of the alarming, at times seemingly inevitable, rate of deterioration of the planet and its resources. A recent cover story published in New Scientist [21] outlines some shocking data. Out of nine fundamental ecological health indicators, we are currently exceeding three (i.e. rate of biodiversity loss, nitrogen fixation and climate change), very close to the limit for another three (i.e. stratospheric ozone depletion, ocean acidification and phosphorus cycle), within the acceptable limits for two (i.e. change in land use and water use) and without a proper understanding as to what are the boundaries and where we stand on the last two, namely chemical pollution and atmospheric ozone loading. The author is asking: „How much further can we push the planetary life-support systems that keep us safe?” [21]. We all now know about the implications of this ecological deterioration, for people and places everywhere, for other plant and animal species and for nature in all its wonder. The IPCC (Intergovernmental Panel on Climate Change) and Millennium Ecological assessments (e.g. [2, 12, 23]) have provided ample scientific evidence as to what is happening with the planet. How are we, and the education we provide, responding to this? What on Earth are we doing to allow all these trends to continue?

Together with the widespread and increasing recognition of the planet’s deterioration, comes an urgency to find a way of ensuring effective education for sustainability as an immediate response to pressing needs that brings about measurable, meaningful and practical change. Traditional educational paradigms (please refer to Table 1) typically reinforce a destructive and oppressive worldview and are weary and unable to cope with having to explain the moment we are living in or in answering our future needs. The world needs a new paradigm if it is to survive, a new way of being and doing and seeing. Sustainability education and the concepts it endorses (see also Table 1), must help for such a transformation to occur or cease to exist. It is dangerous to believe we are educating for change if we are being ineffective – particularly when that change may well be a matter of life or
death. According to Kahn [14], “...our moment is new – never before have the collected mass beings of the planet Earth been so thoroughly threatened with extinction as they are now and never before have so many of us raised this problem consciously and desperately together in the hopes of transforming society towards a better... education remains a primary institution towards affecting social and ecological change for the better”.

This paper explores what it is to teach sustainability. It is based on a 20-year experience in Australia, but draws on very recent examples from Curtin University. After explaining why educating for sustainability is a challenging task, we outline some specific characteristics of this new approach and present a brief history as to what has lead to its development. It covers humane education, environmental education, eco-pedagogy, UNESCO’s Decade for Education for Sustainable Development (EfSD), education for a culture of peace and sustainability, participatory education and humanistic education. The paper then examines case studies from teaching a Masters course in Sustainability Studies at Curtin University in 2008 and 2009 and the lessons drawn from this experience. It concludes that the most prominent feature of education for sustainability is to allow students to feel empowered to challenge the current system and create a world that better represents their dreams for the future.

1. Challenges of sustainability education

Sustainability, and thus education for sustainability, is a unique field, one that is very different from most other disciplines for a range of reasons that create a number of questions and challenges. It is a relatively new subject and much is still unknown in terms of documented or proven outcomes. Progress and new developments are constantly happening but so many basic issues remain. For example, how do you measure sustainability or teaching outcomes? What does it mean to be sustainable, or more sustainable? How soon is soon enough for any changes? What are the cumulative impacts and considerations, what are the priorities?

To make things even worse teaching sustainability also means unteaching unsustainability. Evans [4] describes the current educational system as a “shattered mirror” that: firstly, provides a fragmented view of the world, i.e. each broken piece of glass reflects only a particular section of the picture but the mirror itself cannot present a realistic complete view of the world; and secondly, it is always backward looking, i.e. the mirror only reflects what has already been created and cannot allow for futuristic images, forecasts or dreams. These are exactly the practices and approaches that teaching sustainability needs to transform and replace. They include progressivism, objectivity, rationalism, reductionism, mechanistic view of the world, scientism, efficiency, anthropocentrism, instrumental reasoning, compartmentalisation of life, humans in opposition to nature and the shrinking of the world for the benefit of the human race. (Please refer to Table 1 for clarification of these concepts.)

Unteaching unsustainability also involves dealing with habits, attitudes, perceptions and behaviours within society that encourage reckless and irresponsible actions leading to ecological and social deterioration. More often than not, such practices are encouraged by what is perceived as economically rational decision-making. For example, increased productivity and efficient use of resources can result in encouragement to consume more and further resource depletion.

Unteaching unsustainability requires us to learn to question and challenge everything we do, the institutions and systems that reinforce life as we currently know it. This requires envisioning a new world or a possible world – a better place where life interacts with itself and all around it in a completely different way. This is difficult and contrary to much traditional education as it requires a brave new worldview and charting an unproven direction. It also requires spiritual and intellectual strength to deal with all the obstacles.

Learning sustainability is a life-long journey. It is difficult to pin-point where it starts and where it ends. It is however happening against a background of vested interests, e.g. by the fossil fuels lobby or chemical companies, and calls from skeptics who see it as a conspiracy against world capitalism, another attempt at reviving the hippy movement or green fascism.

Evans [4] also stresses that the frame of the “shattered mirror”, the system of values and beliefs embodied in traditional institutions of higher education—is wooden because it feeds the intellectual abilities but avoids matters of the heart and spirit, and these are the ones that make people care for the prospects of future generations.
Even with the best intentions, sustainability covers a vast range of interrelated topics – where do you start? Where you finish? How to prioritise between climate change, consumption, production, energy, population, urbanisation, health, poverty, inequity, injustice, human and natural rights, politics, globalisation, ethics, waste, water, resource distribution, capitalism, suppression, world orders, domination, development and the developing?... These are all examples from a lengthy list. It is not difficult to start feeling overwhelmed and pessimistic. Too much to do with too little... Is it all too late?... What good can I do? I am just one person... And the bad news keeps coming – lost species, weather calamities, oil spills, air pollution, drugs, obesity, poverty... Has humanity transformed itself into “homo economicus” [26]? Hope for the future is being replaced by fear from, and for the future, and sustainability students and teachers have to work continuously within this space of negativity and lack of encouraging good news stories. The loss of faith in humanity hurts, and sustainability education requires an honest look at who we are and where we are going. This is confrontational and not an easy journey.

Sustainability and sustainability education require vast personal and collective paradigm shifts – completely new individual and global ways of being and doing... Yet because there are very few examples illustrating how this new way of being and doing might look, feel or work – it can sometimes feel imaginary, illusive or impossible. Where do we find the strength and the leadership to fight against huge vested interests and a fundamentally lack of transparency? The application of almost all sustainability concepts, such as equity, diversity, locality and bioregionalism are universal, interconnected, all-encompassing and broad-based but where do we start in the classroom and in real life? Each topic we touch is directly and indirectly linked to a wide range of other related topics, making sustainability education a web of interconnections, in fact, as far as sustainability is concerned, everything is connected!

It is not only challenging to prioritise what should be taught in any given period of time that teachers and students are able to spend together, but also where do you start and where do you finish as a teacher or as a student? Life-long learning, awareness, review and adaptation are required in order to constantly remain relevant and up-to-date.

Sustainability education is unlike any other subject, discipline or group of subjects. It challenges how we relate to ourselves, each other and nature. The key is to defy all dominant paradigms, cultural norms, politics, economics, educational practices and equip students with new ways of doing, seeing, being and believing. This education cannot prepare students to take their place in society; it must prepare students to create a new society!

Sustainability education is learning about a way of being as much as it is about learning about a way of doing. These go hand in hand in a delicate and passionate tango dance that the

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Table 1. Comparison of current education and education for sustainability

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<th>Current Education</th>
<th>Education for Sustainability</th>
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<td>(Spelman, 1996)</td>
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<td>Progressivism</td>
<td>Adaptivism</td>
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<td>Objective</td>
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<td>Rationality</td>
<td>Ubiquity and subjective</td>
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<td>Mechanistic</td>
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<td>Human opposition</td>
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<td>Environmental</td>
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<td>Shredding the world</td>
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| Linear progression and economic growth | Conscious change and adjustment |
| Rational independent reality | Ubiquity and subjective co-exist |
| No place for emotions and spirituality | Down to earth |
| Understanding of matters most important | Creativity |
| Understanding the whole if we understood its parts | Understanding the relationships and new emerging properties |
| National answers dominate | Proleutism |
| Standardisation, bureaucratisation, hierarchy | Outcome-based |
| Human species are most important | Responsible |
| Values determined rather than determining values | Humanism and Integrated |
| Development | Embedded in nature development |
| Integration of life | Common attitudes and actions |
| The “sacred” human | Opening up the world |


student and teacher must continually be sharing even when the tunes keep changing. How do we do this? This may seem a daunting task but it is essential if we are to ultimately survive on this beautiful planet Earth.

According to Evans [4], "(h)igher education, if it is to play a role in developing sustainable ways of being human in the world, cannot continue its traditional functions in a society headed for global catastrophe. It cannot simply aim to help individuals achieve lucrative careers in a world where continued enslavement of nature and economic and cultural colonisation of peoples serve as the inputs for economic growth—and where that growth leaves in its wake widespread diminishment of the very natural and human resources and systems that support it". The change needs to be substantial and faster than what we have witnessed in the past with change of educational paradigms.

Sustainability education needs to be "essentially transformative, constructivist, and participatory. It is also integral... in that seeks to incorporate as many insights and perspectives from as many disciplines as possible to understand events, experiences, and establish contexts..." [19]. The principles that need to be at its core relate to adaptivism, the existence of mixed realities, down-to-earth approach, creativity, systems thinking, practicism, outcome-based, responsibility, value-based, embedded in nature, and allow for integration of life and opening of the world. (Please refer to Table 1 for more explanation.) The history of efforts along these lines dates back in time for more than a century now, with the emphasis shifting to what we now perceive as a humanistic education. This journey is briefly depicted first followed by the approach and case studies from Curtin University.

2. Approaches to sustainability education

The overview below follows the major historical trends informing the line of work we have adopted at Curtin University and the ideas that have been woven into our approach.

2.1 Humane education

Humane education emerged over a century ago when humane societies were mandated with both child and animal protection and the link between animal cruelty and family violence was assumed. However this link was disregarded when animal welfare and child welfare organisations became separate entities. In the 1990s some educators began returning to the roots of humane education by focusing on the interconnections between violence, exploitation and injustice and encompassing not only animal-related issues, but also environmental considerations. This interconnectedness "...inspires people to act with kindness and integrity and provides an antidote to the despair many feel in the face of entrenched and pervasive global problems. Humane educators cultivate an appreciation for the ways in which even the smallest decisions we make in our daily lives can have far-reaching consequences. By giving students the insight they need to make truly informed choices, humane education paves the way for them to live according to abiding values that can lend meaning to their own lives while improving the world at the same time" (Humane Education for a Humane World, IHE publication, n.d. cited in [11]). This approach has many merits but remains on the fringe of both practice and research. It does however have relevance to us and has thus been essential into our teaching conceptualisation.

2.2 Environmental education

Environmental education is an already well-established subject taught since the 1970s that emphasises the relationships between people and the physical environment in terms of how to preserve it and to appropriately manage resources [7]. It stresses the importance of a healthy ecological ambiance for human life but concentrates predominantly on how to protect the natural environment.

It is considered by many to be an outdated approach that is too narrow in terms of content coverage and direction in order to engender broad-based sustainability [20]. Such an approach however paved the way to understanding the relationships between people and nature and continues to inform the teaching of sustainability.

2.3 Eco-pedagogy

Eco-pedagogy began in a Latin American context growing out of discussions at the first Earth Summit held in Rio de Janeiro in 1992 that aimed to formulate a mission for education that universally integrated an ecological ethic, and resulted in the Earth Charter ratified in 2000. It is an offshoot of critical pedagogy which encourages students to question and challenge domination and dominating beliefs and practice to
achieve a critical consciousness in a continuous process of unlearning, learning and relearning, and evaluation and reflection with a future-oriented ecological political vision [16]. It has an appreciation for the collective potentials of being human.

Eco-pedagogy works at a meta-level, critiquing environmental education and education for sustainable development as hegemonic forms of educational that simply reinforce the problems creating our growing global sustainability crisis. Eco-pedagogy statedly moves from an anthropocentric pedagogy to a pedagogy based on planetary awareness, towards new practices of planetary citizenship and a new ethical and social reference, namely planetary civilisation [7]. Further, it acknowledges human beings as creatures that are always in movement, as „incomplete and unfinished“ beings constantly shaping themselves, learning and interacting with others and the world [6]. It is opposed to the traditional way of pedagogy which is centred in tradition, is static and generates humiliation for the learner when he or she is evaluated. Strongly influenced by the work of the philosopher Paulo Freire, it is a democratic and solidary pedagogy that aspires to engender transformative energies, untapped life forces and other liberatory potentials capable of aiding others in the reconstruction of society on the way to a more peaceful, harmonious and beautiful world for all creatures great and small. It is ultimately a total liberation pedagogy for sustaining life [15].

2.4 UNESCO’s decade of education for sustainable development

The United Nations Education, Scientific and Cultural Organisation (UNESCO) declared 2005-2014 as the Decade for Education for Sustainable Development (DESD) based on the Earth Charter’s principles and values adopted at the 2002 World Summit in Johannesburg [28] and begun coordination efforts to provide a humanistic foundation for all national systems of education highlighting. In essence the DESD’s goals are [7]:

- to facilitate networks and bonds amongst activists who defend ESD;
- to improve ESD teaching and learning;
- to help countries to adopt the Millennium Goals by means of ESD;
- to offer countries new opportunities to adopt ESD in their efforts towards education renewal.

Essentially DESD aims to make people aware of sustainable development and the importance of the planet’s survival as related to people’s own quest for a sustainable livelihood. It is integrative and interactive and to a limited degree, within the realm of definitions of development, emancipatory. It calls for transformational action, planetary citizenship, multi-, inter- and transcultural and multi-, inter- and transdisciplinary dialogue that promotes the end of poverty, illiteracy, political domination and economic exploitation [7]. The Decade “is not only about the content of education but equally about the process, the methodology, and the linkages it brings between subjects” [25]. It emphasises the need for new roles for the teacher and student, the importance of stakeholder participation, including industry (e.g. [17]) and recognition of the emotional and spiritual sides of our experiences along with the logical and rational thinking. Consequently it calls for new methods and approaches in the process of transformation of the traditional classroom. The aim is to provide a regional as well as a global map of progress towards sustainability [27].

2.5 Education for a culture of peace and sustainability

This form of education articulated well by Gadoti [7] is based around many principles and values that promote harmony in the human and natural world. It originated from Gandhi’s philosophy „The more I have, the less I am“ [13] which resents conflicts and material possessions but encourages peace and voluntary simplicity. According to Wenden [29], the environment is a shared territory and a common resource for life which similar to peace education requires people to learn how to share, discuss, negotiate, live together and build together. Some of the principles are [7]:

- Educating for thinking globally and transforming both local and global levels of society;
- Educating one’s feelings – to feel, to take care and to live every moment of our lives making sense of this existence. We are part of a whole that is under construction;
− Teaching our identity to the Earth as a vital human condition – we must educate to be emotionally bound to the Earth;
− Educating for planetary awareness and recognition of our interdependence – no more passports, foreigners of Third and First worlds; we, the people of the Earth, are a single nation;
− Educating for understanding – education for human ethics and not for the market’s instrumental ethics, for communication and how to better understand each other not how to take advantage of each other; understand solidarity as a condition of our human survival;
− Educating for voluntary simplicity and quietness – guide our lives with new values: simplicity, quietness, serenity, listening, living together, sharing discoveries and building together.

The logic of sufficiency [22] endorsed by the education for a culture of peace and sustainability is not congruent with the concepts of efficiency and economic rationalism espoused by most educational practices. It does however fit with ecological and social rationality which needs to feature in sustainability education and we have incorporated this into our approach.

2.6 Participatory education

Participatory education acknowledges the wealth of knowledge, experiences, ideas and skills that students bring with them in the classroom. It focuses on creating an environment where teachers and students are equal partners and contributors in the learning process [5]. Characteristic for this type of education is that the participants determine the contents and timescale of the learning process as well as it logistics [24]. It emphasises the development of skills, such as listening and reflection, group work, facilitation, use of body language, conflict management, asking question and challenging existing practices, that are required for the handling of any sustainability issue.

A relatively new direction in participatory education is its link to the concepts of participatory or deliberative democracy [3], which reflects the social disillusion with democracy and current institutions, including educational ones, that encourage the maintenance of the status quo and continuation of current processes and practices [10, 30]. Following the conceptual model of Habermas about the transformation of the public sphere through rational-critical debate [9], this theoretical process has been broadened to include education and the contribution students can make to hot or sensitive public debates.

Participatory education thus requires students to partake into real-world problem solving, come up with practical solutions that work and provide examples of how a transition towards sustainability can become a reality. This is another valuable approach incorporated into teaching sustainability at Curtin University.

2.7 Humanistic education

This is the approach that theoretically has the biggest influence and best articulates the key considerations and intentions of our conceptualisation of teaching sustainability. It is founded on the thoughts and principles of eco-pedagogy but goes a step further to recreate education as a world-humanising project – a global project of students, scholars and people everywhere, a participatory human project encouraging civic courage, that internationally revives reason and democracy, so that people everywhere feel empowered and are fighting for a better and more sustainable future [8].

Humanistic education has developed in response to the recognition that many universities have become commercial enterprises viewing students as customers or consumers who will sell themselves on completion of their degree to the highest bidder. Knowledge is something to be passively consumed to this end and students are viewed as exploitable human resources, requiring top-down management similar to any other kind of resources. As such they are dehumanised, lacking voice and robbed of the impulse to participate in the determination of their own human situation [8]. Thus education now only furthers the symptoms of the disease.

We think that it is inexcusable for education to follow a system in which people are just live resources. A commodified human being, like a commodified cow or tree, is a dead human being. So it is realistic and justified to ignite the revolution of education so that people can raise their voices in defence of the Earth and against the decay of humane and sustainable values [1, 8].

Hence humanistic education aims to provide students, scholars and teachers with the skills and rights not to sell or surrender to the system
but rather to learn to challenge and change it and those who perpetuate it. After all, sustainability education (and universities!) should exist for humanity and the planet, not for commercial interests! According to the humanistic approach, education must not:

- Permit businesses or enterprises to form students in the way they want to so that they can have better employees; or
- Create students as products who will be traded later into the system and deprived of the unique experience of a creative moment in life.

Humanistic education if it is to achieve its purpose should facilitate a renewed breed of students – revolutionaries, who are driven to create an alternative world, with new democratic institutions, appropriate technologies and a social system predicated on a democratic economy. It should also:

- End global psychology of exploitation, acquiescence and anti-reasoning;
- Create and develop a new eco-psychology of resistance and non-exploitation;
- Empower students to govern and change their situation by taking up collective action in the name of social justice, freedom, democracy, peace and sustainability;
- Inspire students and give them the impetus and courage to construct vigorous practices and theories, to inspire civic participation and to support participatory democracy;
- Unity students, scholars, teachers and people beyond any frontiers and any differences, and against all forms of exploitation, devaluation and the devastation of humanity and nature;
- Empower students to take life seriously and to understand it as something sacred and significant and thus necessarily to be able to take responsibility for what is happening in the world around them.

Viewed in this light, humanistic education is education for sustainability and it holds great hope as it is ultimately a humanising cultural revolution students can and should engage in. The case studies described in the next section illustrate the outcomes of this approach through four of our students.

3. Our approach to sustainability education: Humanistic sustainability education

The above review of progress made in sustainability education reveals that there is a clear agreement on the need but not the methods of delivery. All approaches have something valuable and relevant to contribute but none felt comprehensive enough for us. We believe sustainability education is a call to revolution, passive and loving but a cultural revolution non the less. As such it should ensure maximum opportunities for interaction between all people for ending the indiscriminate and accelerated destruction, exploitation and devaluation of humanity and nature. Like Grigorov [8], we believe that the traditions furthering democracy are an essential consideration that must underpin all education for sustainability. This is important for a number of reasons, not least that there needs to be a mass groundswell towards bringing about an all-inclusive paradigm shift if the Earth and its resources are to survive for future generations.

We have taken the key elements of humanistic education and combined them with others from the approaches described above and coined this Humanistic Sustainability Education. It is the way we work with our students and we focus on making sure we include the key factors described in Table 2.

Humanistic Sustainability Education is learning about a way of being as much as it is about learning about a way of doing. It is education for survival and progress in a dangerous time, for saving the Earth and all who live here, for participatory democracy and ensuring universities are institutions for reason and sustainable science. Such education aims to ensure the sustainability revolution and the new culture of human responsibility and stewardship of the planet. We work together with our students to redirect society to ecological care, to do away with the powers devastating the Earth and to transform the world so that life is preserved in all its vibrant dimensions. Grigorov describes it as a place that we can now see coming over the horizon, „the horizon-line of human self-realisation through education, an education and science full of love, sanity, and future hope, attuned to our human situation and all of life” [8]. We tend to agree. The passionate tango dance between the teacher and the student leads to a dance which includes the planet that both student and teacher need to embrace as it embraces us.
Humanistic Sustainability Education should enable students to participate in the revolution for survival and sanity, to participate in the world not as corporate clones, in safe jobs that continue to serve the interests of very few, but as courageous visionaries and leaders able to go forth and make the changes the world needs to survive.

And it’s working! In the midst of so many doom and gloom stories, our students are leaving us and putting into practice true sustainability initiatives that are genuinely starting to change the world – and thus are shifting us all towards an alternative future, a future of hope and possibility where the world is safe, society is just, and in which nature and future generations and their wellbeing will be safeguarded.

Students from our Master in Sustainability Studies course in 2008 and 2009 have taken what we learnt together and have used this to start working toward changing the world. Our course participants, although Master’s students, are at „entry level” in terms of sustainability, usually with no previous foundation in the field, but with their hearts in the right place. They come from all walks of life and with a wide range of life-experiences. They are taking their visions and courage and combining it with the knowledge we share with them are using this to build a better world, some on a more macro or global level and others on a more micro or local level.

**Case study 1: A global leader**

Sonia (not her real name) has been vegetarian all her life; in fact nobody in her family knows the taste of meat. She always thought that it is cruel to inflict pain in animals and that killing them is inhumane when there are other alternatives. While doing her Master in Sustainability Studies, she also realised that vegetarian meals have a much lower carbon footprint, cause significantly less pollution, require less water, no grain feed. Sonia also felt appalled while familiarising herself with the inhumane methods of farming and the widely spread violence against farm animals. She could not reconcile how the developed world could inflict such humongous problems and at the same time fight obesity and health problems directly related to overconsumption of a predominantly meat-based diet.

A step in the right sustainability direction was to encourage people to eat less meat. Sonia had the vision of creating a new type of restaurants where people can have inexpensive nutritious and most importantly tasty vegetarian meals. This became her Sustainability Studies Project which she completed brilliantly.

Sonia’s global chain of vegetarian restaurants is about to be launched making her a global leader in a transition to a healthier and more sustainable way of living.

**Case study 2: A local leader**

A charismatic young environmental engineer, Stephan (not his real name) knew a lot about the ecological health of the physical environment. He was often invited to share his passion for nature with school children and other young people which he truly enjoyed. It was however difficult for him to understand why people were not doing the right thing. Was it because of the lack of regulations, was it because of the economic burden or was it because they did not care?

Stephan started working with a local authorities organisation and realised that he was now in a position to contribute towards a change. This is also when he started his Master in Sustainability Studies. While working with us, he was able to convince his organisation that they not only needed a sustainability officer but...
there was also a necessity for constant communication between like-minded people within the organisation. He established a range of strategies to facilitate training and decision-making with respect to sustainability, including a regular newsletter. Establishing himself as a local leader was a slow but a very rewarding process that he could go through encouraged and supported by his teachers.

**Case study 3: An industry leader**

The real estate industry has been giving Diane (not her real name) not just reliable income but also the satisfaction of making people happy when they sell or buy a home. Despite this, there has always been something missing. What makes a house a good home? How is our choice of shelter affecting the environment? What are the best technologies that save energy in the house and how can we use them? How can water be saved in the homes on the Earth’s driest continent?

Despite the fact that Diane did not have any previous undergraduate degree, she had enough work-based knowledge and experience to be admitted into the graduate certificate and later continue at Master level. She was now working in a team of like-minded people who were trying to find answers to similar questions. Her passion for a more sustainable housing translated into the establishment of an on-line group site where the issues that were of interest to her could be aired out to the broader community and often find answers.

Diane became a leader within the real estate industry and an expert in energy auditing. Soon she was also a role model and started to signify the desired changes that prospective buyers would want in a new house. She was no longer just selling houses, she was educating the sellers and the buyers as to what type of living was best for them as well as for the planet.

**Case study 4: A community leader**

A retired lawyer who has been working with the corporate justice system all her life, felt dissatisfied and personally unrewarded for the long hours of service and considerable efforts that she has put into her job throughout the years. She wanted a change towards a more meaningful way of using her skills and abilities, something that will leave a long-lasting legacy and will improve the people’s lives. Being a corporate lawyer wasn’t anything special as you serve the system and the particular interests of the organisation you represent which sometimes even go against your personal values system. You are just the person doing the job while you are there but as soon as you leave, you get easily replaced by another employee whose skills and experience are in many ways similar to yours. What the corporate memory retains are the smooth transactions or vice versa that you have been able to provide. It does not remember you as a person with a vision, as a fighter for a better world or as an empathic and sincere woman who can make you laugh as well as give you hope and encouragement.

Fiona (not her real name) wanted a better way to apply herself as a professional, competent and assertive woman. She also wanted to do something for the people she cared about. Who were they? Where the bloody hell could she leave her mark and contribute towards sustained improvement and positive change in life?

Working with us, Fiona was able to look deep into her heart and find the love and care she still had for South Africa where she was originally from. She decided to become a volunteer in Khayelitsha (a sprawling shanty town with a population of around 2 million), working with orphans, building houses in the Indlovu eco-village, raising funds and developing household agreements for their occupants. Fiona proved herself as a community leader for the new NGO (non-governmental organisation) whose main agenda was to provide a better life for the children of Indlovu.

After spending half a year in South Africa, Fiona is now back in Australia but her legacy remains with the work of the NGO. The Indlovu time was the basis for her Master’s in Sustainability Studies project and not only did it receive the highest grade, it also changed the lives of those affected by HIV/AIDS and poverty.

These are only four examples from a long list. In fact, every student of ours has a story of personal growth and achievements to tell. We as teachers are constantly learning and improving with the work our students are doing, but most importantly we are proud to be part of a positive change.
4. Lessons learned from humanistic sustainability education

Some of our thoughts on the application of our Humanistic Sustainability Education are presented in Table 3. They are summarised as the lessons we have learned. The biggest lesson however is that of a constant hope and that to „Never doubt that a small group of thoughtful, committed citizens can change the world. Indeed, it’s the only thing that ever has” [18].

<table>
<thead>
<tr>
<th>Table 3. Lessons learned from humanistic sustainability education</th>
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<tbody>
<tr>
<td>1. Flexibility and sophistication are equally required in teaching, learning and application</td>
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<tr>
<td>2. The teachers and learners are both all the time and need to work jointly during the education process</td>
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<td>3. There is need for sustainability “psychology” or the ability to confirm and reaffirm the value of each and every contribution</td>
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<td>4. Acknowledgement and recognition of the fear factor are important</td>
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<td>5. The envisaging of future possible worlds is crucial</td>
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<td>6. Whilst understanding of the problem is important, a solution orientation is required</td>
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<tr>
<td>7. A revolutionary or activist underpinning is essential – students are not being groomed to take their part in society but rather to find their own way and creativity to change society and the current dominant paradigms</td>
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<td>8. The heart and the soul – feelings – must be taught and intimately considered throughout the learning and teaching process</td>
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<tr>
<td>9. The individual contribution is crucial but each individual must understand that it is the collective that counts because EVERYONE needs to live and think and be more sustainable</td>
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<tr>
<td>10. We must educate for breakthroughs, for non-conformity, for yelling and for dreaming of other possible worlds</td>
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<td>11. To make students feel empowered to challenge the system. It is important to know what each of us can do to save the planet and to understand how the responsibility and efforts of each person much be attached to the global struggle for sustainability. Changing “the system” is what matters and for this reason we must continue to make our small changes, which, if followed by millions of people, may promote the necessary big changes.</td>
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Conclusion

According to Sarabhai [25], „(w)hen we need to make fundamental changes in the way we relate to our only planet, when the human race needs to come back from our all powerful and human-centric illusion the industrial age gave us, and when we need to reconnect with nature and in humility learn how perfectly balanced and dynamically sustainable the natural world is, education and not just technology has to be the main driver of change”. This truth is often forgotten in the political and technological races for fixing the world. However, the education we need is the one that allows both students and teachers to ask themselves: „What the bloody hell am I doing?!“ and be able to not only reflect on their actions but also come with examples of the change for this new world.

The case studies described in this article are these positive signs of change. They are the examples as to how one little person can follow their dream and create a better world in an exquisite fervent and fiery dance with the teacher. It is time for a new sustainable world of common sense, liberation and democracy in which everyone, in one form or another can partake and benefit, in which nature is treasured and the wellbeing of future generations is safeguarded. Sustainability education we believe, must be directed to this end. In order to achieve this, whether one is a teacher or a learner – or a practitioner in any other field in the world, sustainability and any related sustainability education must inevitably start with the question: What on Earth are we doing?

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SOME ASPECTS OF IMPROVEMENT OF THE QUALITY OF HIGHER EDUCATION IN LATVIA

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Abstract

Sustainable development of the national economy is connected with ability of the system of higher education to ensure and prepare the specialists required for different branches of the national economy. Compared with other resources the human resources have a vital role in ensuring persistent and dynamic development of the economy in Latvia. Quality of higher education, infrastructure and funding of higher education are fundamental for emerging new specialists and innovations. Obviously, emerging students decide to enroll in higher education establishment if knowledge, skills and diploma of the establishment can ensure better position in the labor market. Result oriented algorithm for improvement of the quality of the higher education of Latvia and its international competitiveness have been worked out for development of the system of higher education.

Key words: quality of higher education, funding of higher education

Introduction

Development of Latvia primarily depends on the capability of the education system to produce the required specialists of various fields, as the current resources of the state cannot ensure a dynamic and steady national development. In the some economic theories human resources are regarded as one of the major growth factors and it is becoming even more important for small countries with limited natural and energy resources. The previous advantage – the comparatively cheap labour force is no longer topical and will not serve as a resource for development of national economy. The demand for higher education in labour force has increased over the last five years. The supply of labour force with higher education has also had a distinct tendency to grow over the last five years.

The supply of labour force has increased by 75 thsd. (31%), but its proportion in the total labour force supply has increased from 21,3% to 26%. Meanwhile, the labour force supply of secondary vocational education has decreased (-2,9%) and there has been a minor increase in the supply of general secondary education (4,4%) and primary (and lower) education (2,5%). The number of employed population is expected to decrease by approximately 16% in the basis scenario by 2010 and by approximately 13% in the target scenario. With the situation in economy stabilizing, the demand for labour force might be expected to resume growth in 2011-2012 [1].

In order to maintain national development, the education system of Latvia should be improved so that it produced specialists of modern education in national economy, conforming to the needs of national and global labour market and social development.

The object of this research is the higher education system of Latvia. The subject of this research is the influence of higher education funding on thematic forms of education, as well as the potential aspects of education quality improvement.

The goal of this research is to develop algorithm to improve the quality of higher education of Latvia and improve its international competitiveness.

Research methods - generally accepted qualitative and quantitative economic research methods have been applied in the elaboration of this study. In general, these are analysis and synthesis based methods for studying individual problem elements and process components in order to establish the underlying interactions.

The study draws on the results of research work done by distinguished foreign and Latvian scientists and economists. The different surveys and reports were used for the analysis. It has been concentrating on increasing national human resources potentials.

1. Funding of higher education and its influence on the quality of education in Latvia

The funding by the state budget to higher education in Latvia is low in proportion of the GDP. In 2008, it was 143 million lats or 0,88% of the GDP, which is considerably less than in other EU countries. According to data of the Information centre of the Ministry of Education and
Science, 69.3 million lats were earmarked for funding of the higher education from the funds of the state budget in 2009; after the first decrease, when ¼ was sliced of the funding, the funding volume was 52 million lats, and another reduction of funding left the higher education with 42 million lats (as of 1 June 2009 [2]).

As funding to the higher education has decreased due to crisis, it impedes the higher educational establishments in implementation of adequate investments in development of teaching staff and university infrastructure, thus making deterioration of the educational quality possible. Besides, reduction of funding might endanger equal opportunities to education for population of various social strata in the future. The education funding problems will particularly badly hurt families of low income.

The total expenses per student per year are considerably less in Latvia than other EU countries. According to Eurostat data for 2006, higher education funding in Latvia (public and private) was 3875 euro per student per year, which is the third lowest index in the EU after Estonia (3378 euro per student) and Poland (3630 euro per student). In the light of the considerable reduction in public and private finance resources in 2009, there are grounds to state that expenses per student in Latvia have significantly decreased at the moment.

The state budget provides funds for a definite number of study positions, not university or college as an institution. The Ministry of Education and Science annually establishes the division of higher education study positions, funded from the state budget, by thematic groups of education, in accordance with the granted volume of national budget funds.

The majority of study positions funded from the state budget (60–70% universities and 90% colleges) are granted in industries of priority as determined by the state – natural sciences, engineering sciences, the science environment protection and healthcare) [2].

Human resources are the most essential source of welfare of any nation. Each individual is driven by the concept of „economic person“. The decision to enter university, unlike the decision to find a job, may be regarded an investment decision, in view of both the expenses and benefits. Before making a decision about entering a higher education establishment, the would-be students weigh up the direct expenses, the expenses of missed opportunities, and the benefits. There is an obvious relation: the greater the income a higher education certificate promises to generate, the more attractive the higher education establishment and more students resolve to study there.

On the other hand – tuition fee or other direct expenses, or a loan becoming more expensive, it may cause the number of applications in this educational establishment to drop. The influence of obtaining secondary and higher education on the individual may be characterized by the following graph.

Fig. 1. Income of an individual, depending on the level of obtained education [3]

where:

- \( v \) - direct expenses, obtaining secondary vocational education;
- \( b \) - direct expenses, obtaining bachelor’s degree education;
- \( m \) - direct expenses, obtaining master’s degree education;
- \( v' \) - unearned income for the time spent obtaining secondary vocational education;
- \( b' \) - unearned income for the time spent obtaining bachelor’s degree education;
- \( m' \) - unearned income for the time spent obtaining master’s degree education;

1 – curve of earned income for an individual with secondary vocational education;
2 – curve of earned income for an individual with bachelor’s degree education;
3 – curve of earned income for an individual with master’s degree education.

1’ – income at pension age with secondary vocational education;
2’ – income at pension age with bachelor’s degree education;
As the graph demonstrates, with the expenses for obtaining education growing, the unearned income grows correspondingly. In order to determine the economic efficiency of education, internal rate of return is used (r). The larger the internal rate of return, the more profitable the investments in education. The practice confirms that larger investment in obtaining the higher education guarantees larger amount of money earned. There is a general regularity that income of an employee keeps growing until retirement (60-65 years in average). Reaching this age, the income of employees of all educational levels tends to decrease.

The funding of studies is constituted by base funding, corresponding the optimum list of study programmes and the number of students, consisting of funds for public utility payments, taxes, infrastructure maintenance, supplies and equipment, and staff salaries, as well as fees for studies.

The volume of studies funding is identified on the basis of the number of study positions determined by the state for the respective university or college, base expenses of a study position and study expense ratios of thematic fields of education.

The expense ratios of thematic fields of education are indices determining the amount of study position expenses in the respective thematic fields of education versus the base expenses of a study position. According to the available data, the smallest ratios are for law sciences, humanities, social and behaviouristic sciences, sciences of information and communication, business and administration; in these fields, the minimum value of studies’ expenses ratio is 1.0, and the optimum value – from 1.1 to 1.4. The largest ratios, in turn, are in the areas of military protection, dentistry and veterinary science; the minimum value of studies’ expenses ratio in these fields is from 4.0 to 6.0, and the optimum value ranging from 5.0 to 6.0. Military protection is the only thematic field of education, where the minimum value of studies’ expenses ratio is equal to its optimum value (6.0).

Transition from minimum values of studies’ expenses ratios to their optimum values occurs gradually over a course of ten years, augmenting the studies’ expenses ratio value by one tenth each year.

The values of studies’ expenses ratio for master’s degree study programmes is one and a half times and doctor’s degree study programmes – three times larger than the studies’ expenses ratio values for bachelor’s degree and vocational studies’ programmes determined of the respective thematic field of education.

It has been the fourth year in a row when the number of students in Latvia decreases. The number of students matriculated in 2009/2010 study year has decreased by 26% in average in comparison with the previous study year. The number of entrants in years 2015-2017 is forecasted to be yet by 50% smaller (due to demographic reasons). This means the existing education system will need a change. Evaluation of tendencies of changes in the number of foreign students reveal that their number keeps growing by little each year, although the growth is rather minute, by 4–6% a year on average and the number of foreign students accounts for merely 1,2% of the total number of students [1].

Comparing the expected labour force demand and supply by qualification groups in 2015, we may observe this tendency appears also here, that a fair of labour force surplus is forming in the group of higher qualification, whereas mid-level qualification employees might be in need.

On the basis of future labour market tendencies, the courses of the current labour market policy should be based on stimulation of supply of the mid-level qualification labour force and implementation of a more effective higher education supply, meaning the quality aspect instead of the quantity.

If to compare the funding for a study position of the state budget to the average tuition fee for full time basic studies from 2006 to 2008, by the profile of thematic fields of studies, we have to conclude that the budget funding per one study position up to now has been considerably higher than the tuition fee in the respective programme. With that in mind, the actual expenses of a study position should be identified, respectively planning the funding from the state budget per one study position.

Data from Figure 2 reveal that 57% of the funding of state universities and colleges come from national funds, the tuition fee covering less than one fifth.

From these data we may judge the level of dependency of the higher education on the funding assigned by the state, and we may just fancy...
the extent of irretrievable damage the higher education would suffer due to funding cuts.

Fig. 2. The average funding per student / per budget student in state universities in 2003-2007 [2]

The picture shows that the funding per student/ per budget student has a tendency to grow, the average funding per budget student grows comparatively faster in the reporting period. The funding per budget student in state universities in 2007 exceeded the funding per student by 1078 lats or 36%. The breakdown of the average funding per student in state universities:

- 1693 lats - subsidy from general income;
- 535 lats - tuition fee;
- 416 lats - research funding;
- 326 lats - other sources.

The number of students financed from the state budget has increased in the academic year of 2008/2009, which is 33 355 (increase by more than 4%, in comparison with the previous year). Thus the proportion of budget students has increased by 2%, which comprises 27% of the total number of students, in comparison with 68% in the academic year of 1995/1996. The number of budget financed study positions in universities and colleges, as established by the state for 2009, is 31 059, which is by 566 positions more than in the previous year. Of the state budget positions, 24 761 positions are bachelor’s degree and vocational studies, 5079 – master’s degree studies and 1219 – doctor’s degree studies [2].

Figure 3 displays that the proportion of those studying at budget funds ranges from 10% to 68%, depending on the thematic group of education. The largest proportion of budget positions (68%) is in natural sciences, mathematics and information technologies (industry of national priority), the smallest proportion (10%) being in social sciences, commercial sciences and law.

Fig. 3. The funds of the state budget in academic year 2008/2009 [2]

The distribution of students by thematic groups and fields of studies has not changed significantly over the last years. At the moment, every other student in Latvia is studying social sciences. The number of degree holders in natural and engineering sciences in Latvia is insufficient. In 2004 already, compared to other European countries, Latvia was at the tail end by the number of studying engineering sciences. Moreover, it should be emphasized that the proportion of students of engineering sciences, production and construction, regardless of rise in the number of study positions financed by the state, is growing rather slowly – from 9,2% in academic year 2004/2005 to 11,1% in academic year 2008/2009. To compare, this index was 20,5% in 1997/1998. In recent years there is a rise of the proportion of students in the thematic group of healthcare and social welfare.

In 2008/2009, social sciences, commercial sciences and law are in leading positions by three indices – the number of matriculated students, the total number of students and the number of graduates – over 50% in each of the selected indices [3].

When assessing the essential indices of higher education in Latvia, special attention should be paid to the number of students, who discontinue studies due to various reasons.

Reduction of student dropout rate is an essential problem from the resource economy point of view, which should be adequately addressed by universities together with the respective state institutions. Particularly now, when student and study loan system is implemented and the vol-
ume of funds available for lending is rather limited.

In accordance with agreements signed between the Ministry of Education and Science and universities, students from study groups for fee will replace the dropouts in the state-financed study positions by a way of competition. Therefore universities, which offer studies for fee, all study positions of the state budget financed should actually be filled.

At the moment, there are no punitive measures against persons, who have studied at the funds of the state budget and discontinue their studies, thus incurring material losses to the state.

The average proportion of dropout students (discontinued their studies) in academic year 2007/2008 was 16.5% among the full time and 19.8% among part time students. Reduction of student dropout rate is a very significant problem from the point of view of resource economy, it should be addressed appropriately.

2. Result oriented algorithm for improvement of the quality of the higher education of Latvia

To raise the quality of the higher education in Latvia and its international competitiveness, as well as streamline the use of the state budget, a result oriented algorithm for improvement of the quality of the higher education of Latvia has been developed. It has been developed upon proposals of principals and researchers of various universities, to furnish the Ministry of Education and Science a tool for improvement the performance of higher education and its international competitiveness. The goal of this algorithm is to attain improvement of the quality of a result oriented higher education and raise its competitiveness.

To attain this goal, three sub-goals are to be reached. These goals entail certain tasks, accomplishment of which require performing certain measures or implement a number of reforms.

This algorithm clearly identifies the certain tasks and the major measures to be implemented, for actual improvement of the quality of the higher education and its international competitiveness. This algorithm includes various measures of simple as well as very complicated degree of solutions. As the problems underpinned by the algorithm are topical in other countries as well, the algorithm could be suggested as a document for employees of universities, ministry of education and other, for addressing and solving in practice certain problems.

It is necessary to eliminate some negative influences on entry of labour market by persons who have obtained higher and secondary education. There are cases, when due to various subjective factors, graduates of these schools are hired irrespective to their speciality obtained, which in some cases reduce their positive effect on company performance. For instance, an MA in social sciences is hired in a position of engineering specialist, which does not contribute to company development. This specialist is required to master vocational knowledge not to mention the innovative experience.

Generation of specialists of like profiles in several universities at the time should be eradicated, as teaching and training has not materially changed between them, it only promotes migration of the teaching staff and strains the competition on labour market.

In the reporting period, various tendencies of furnishing funding could be observed, which serves as evidence to successful implementation of their strategy:

− decreasing of credit from the state budget funds;
− increasing of credit from credit agencies’ funds.

If loan funds from the state budget accounted for a half of the total loan funds in 2002, then in 2004 this figure was 13%, in 2006 – less than 1%, but two years later the state did not assign loan funds, covering only the difference in interest; 100% of loan funds were granted from funds of credit agencies.

The volume of the state guarantees to study loans and student loans in the period of time from 2002 to 2008 was 92,3 million lats, including: 56,7 million lats – amount of guarantee to study loans, 35,6 million lats – amount of guarantee to student loans [2].

Implementation of the lending system may be considered successful on the aggregate, as the established target (relief of the state budget) has been reached.
Conclusions

In environment of a knowledge-based society, education becomes a value per self-dependent. Higher education develops personality. It obtains better prospects of self-realization. That, and not knowledge materialized in gadgets and technologies, becomes the fundamental factor of contemporary society development. The period of formation of knowledge society commands a rapid growth of demand for higher education. To make sure this growth of demand is balanced by a supply of the size and quality, dynamic investment of financing into higher education must be maintained.

Reforms to the system higher education and science would stimulate faster growth in productivity, which would rest upon overall growth of the technology level in all national economy, as
SOME ASPECTS OF IMPROVEMENT OF THE QUALITY OF HIGHER EDUCATION IN LATVIA

well as shifting of its structure for high-tech industries. Such economy model is sustainable, as it allows embedding the growth on advantages of competitiveness of the national economy, stemming from high level of technology, which, at the end, does not cause so distinct disproportions in economy, as those forming in Latvian economy during the previous years of dynamic growth.

It should be noted, though, that the major benefits in relation to these reforms in education and science can be anticipated no sooner than after 5-7 years, i.e., after 2015. Until 2015, the productivity growth of Latvian national economy will pertain primarily to those processes of balancing, which must take place for the competitiveness of Latvian economy to restore, i.e., the development should be faster than the growth of employment and salaries.

It is not only the total funding volume what matters, division by funding sources as well is important. The goal of reforms is to attain, along a definite level of state funding, to activate the channels that encourage investments of the private sector into research and development, as only in such conditions the spending for research and development provides an adequate innovation process in the national economy.

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LIFELONG LEARNING TO BE THE BEST MANAGER

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Abstract

The article is devoted to updating managers’ education nowadays. Lifelong learning has become a necessity for all people and especially for managers. They need to develop their competences throughout their lives if they want to be successful. Moreover, the rapid pace of change in the world and the continuous roll-out of new technologies make managers keep their job-related skills up-to-date. Both skills and management competences contribute to their motivation and job satisfaction in the workplace, thereby affecting the quality of their work. Managers should be able to dedicate time to learning autonomously and with self-discipline. They should be able to organize their own learning, evaluate their own work and seek advice. Learning to learn requires ambitious managers to develop their own strategies for successful educational activity, to understand and know the strengths and weaknesses of their skills and qualifications and to be able to search for training opportunities. A positive attitude to lifelong learning helps succeed in learning throughout all life and become the best manager.

Key words: competences, management competences, lifelong learning, self-directed learning, learning autonomously

A job in management needs specific management competences [4]. A management competency is a set of knowledge, skills, attitudes and personal qualities that combine to make a manager effective in his work, to help a manager to successfully carry out his job in management. A manager should be aware of the importance of management competences and developing them for successful performance in a job that requires being in change of many people. Lifelong learning is the only way for managers to succeed in a profession and a career.

Lifelong learning is more than further education or training – it is a mindset of good managers inventing the future of our society. It is a habit for them to think, understand, explore and improve their knowledge, skills and personal qualities in order to be the best in management environment.

Professional activity of managers has become so knowledge-intensive that learning is becoming an integral and irremovable part of their work activities. In the emerging information society an educated person, especially a manager, must be someone who is willing to consider further learning as a lifelong process. More and more knowledge, especially advanced knowledge, be able to improve skills and personal qualities required for management, are in great demand for managers’ activity, and lifelong learning is not restricted to providing them with opportunity to engage in learning activity, the objective of lifelong learning is to fundamentally rethink learning attempting to change a mindset about it.

Learning to learn skills require the acquisition of the fundamental basic skills [2]. They are necessary for managers for further learning in order to be able to gain, process and assimilate new knowledge and skills appropriate to their work and career. A positive attitude to lifelong learning including motivation, confidence, creativity, experience succeeds at learning throughout people’s life. People obtain fundamental basic skills [2] at schools and universities. But there are some drawbacks in learning, teaching and education in our society.

Most university graduates see their studies at the university as a period of their lives that prepares them well for work and from their point of view it is enough to be successful. They don’t pay attention to the facts that:

− university graduates are not well prepared for work because of lack of experience;
− the pace of change is so fast that technologies and the skills of today’s managers are becoming obsolete within 5-6 years and require constant renewal;
− they can change careers several times in their lives, even though what they learned at a university was designed to prepare them for their first career.

The current mindset about learning, teaching and education is dominated by a view in which teaching is often a process in which a
teacher tells and shows learners something they know nothing about. Although this model may be more realistic for the early grades in schools, it is obviously inadequate for learning processes in universities where the skills for lifelong learning must be developed. Teachers must adopt the role of the initiator and coach rather than being the teller of information. Learning is more than being taught [1]. Learning new skills and acquiring new knowledge cannot be restricted to formal educational settings.

A lifelong learning perspective implies that universities need to prepare students to engage in self-directed learning processes because this is what they have to do in their future professional lives. Self-directed learning means that the learner tends to be systematic independent, not focusing on the teacher [3]. The self-directed learner is able to monitor learning in a classroom and will use learning experience outside of the traditional classroom as well. Working in groups by role-playing, using case studies, or simulations may be an appropriate method of engaging students in this type of learning. Giving students the ability to share their opinions or thoughts among a group of classmates creates a feeling of collegiality among the group and help reduce fear among some of the quieter students. This type of environment will promote an atmosphere of trust where students feel they can share opinions. The sharing of thoughts among classmates is an important part of developing self-directed learning skills within the classroom. Teachers have to take responsibility for cultivating an atmosphere in which every student has reason to share. This is the way to develop lifelong learning skills to help future managers to improve their management competences and demonstrate their value to the company and in the job market. It is advantageous for both students and universities that students are able to direct their own learning: students have acquired the skills for self-directed, universities have succeeded in their objective.

Sometimes universities are inadequate to prepare students, future managers, to compete in the knowledge-based workplace. A major objective of a lifelong learning approach is to reduce the gap between university and workplace learning in order to prepare learners to function in working environment requiring creativity, collaboration, and innovation. Students must be taught within the context of their future work, on real-world problems. Teaching, learning and education must be integrated into their future work. Students must construct solutions to the problems when they are getting into trouble, use their knowledge for actual problem situations. The direct usefulness of their knowledge improves greatly the motivation to learn the new material because the time and efforts invested in learning are immediately paid. Moreover, completing challenging tasks students have opportunities to practice thinking. The aim of a teacher is to encourage students to think in a free way, what is vital for future managers.

Thus, an important challenge nowadays is to learn and practise students, future managers, to function in modern knowledge society, and to develop in them a new mindset for learning. We are sure that lifelong learning and self-directed learning help managers to develop their management competences to be the best managers in order to increase the productivities and competitiveness of their companies and make societies and economies of their countries successful.

References
THE DEVELOPMENT OF FOREST EDUCATION IN THE STATE FORESTS IN POLAND

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Abstract

The article shows the problem concerning development of forest education conducted by State Forests in Poland. Forestry education, which is the part of the ecological awareness of society, bases on the broadly defined principles of sustainable development. „The society forest educational program in forest divisions” was implemented in Poland in 2004. To this day, based on data collected from all over the country, two reports were prepared, which are a collection of information about the development of educational activities in the units of State Forests. Basic assumptions of this program are carried out in forest divisions using various forms such as - field classes conducted mainly on the forest nature trails, lessons in the nature-educational centers and chambers of forestry education, classes with foresters in schools and others, such as - competitions, exhibitions and outdoor events were the subject area concerns the forest. The main recipients of content transmitted through the above mentioned activities are children and school children in age 7 to 15 (they constitute over 75% of the total number of participants in classes). Involvement in these forms providing information about the forest has increased by almost 30% (up to year 2006) since the beginning of the program. The base of facilities used in forestry education and the number of people qualified to carry out such activities also grows every year.

Key words: sustainable development, forestry education, forest, field classes, forest nature trails

Introduction

Environmental education, and by the same forestry education, for sustainable development is a very complex process, which undoubtedly concerns all social and professional groups in each country. Instilling respect for the natural resources of nature, the ability to use them without damaging the ecological balance is one of the most important tasks facing especially the teachers of our young generation.

To fulfil the special conditions which it was created for, environmental education must be interdisciplinary and intergenerational. To its specific tasks should belong: awareness, informing, shaping attitudes, the acquisition of knowledge necessary to solve environmental problems.

Environmental education in the formal education system begins with starting pre-school education. Kindergartens in Poland are an important link in supporting parents in shaping the child’s personality. Important place in this process should has environmental education, which aims, i.a.: the setting off desires and building skills to observe the nature, shaping the sensibility of both the beauty and the damage in the environment, and learning respect for other creatures.

At the stage of primary and secondary schools the aim for the entire school community – headmasters, teachers, students and their parents should be the use of the possibilities contained in the core programs, in order to release and consolidate pupils needs to live in accordance with the ideas of sustainable development.

Environmental education in higher education should concern education aimed at introducing environmental issues in the future graduates of all colleges and universities. The scope of this training, its forms and compulsory should be treated in different ways. It is also important to create new courses, which prepare specialists to work in the field of environmental protection as well as the organization of postgraduate studies to complete knowledge in the field of environmental protection.

Because of above mentioned actions in recent years we can see how environmental awareness is growing among children and adolescents. However, in order not to wait for the results of our work for next few years, when our children are in positions of managing our environmental goods, it is needed also to arouse the interest of adults to acquire additional ecological knowledge in formal and informal education system. Special role in the development of environmental education among adults must fulfil the government structures. The best and quickest way to raise the adults ecological awareness is to commit a large number of residents in decision-making processes.
Ecological Education in the State Forests

Long time since the foresters have been involved in environmental education of society. For several years, it is no longer a voluntary matter, because the State Forests set themselves the forestry education of society as a formal aim. Since that time there is a need to improve knowledge and skills in the education and promotion of forestry.

Recent years have been a period of hard work in the State Forests in the field of forestry education. It all began in 1997 when the Minister of Environmental Protection Natural Resources and Forestry accepted the document called „National Strategy for Environmental Education”, which was a consequence of the implementation of the recommendations of Agenda 21. As a result, environmental education, and thus forestry education, became a reality.

Directly in the State Forests education developed at the beginning of this century. In 2002 to the Forest Districts were sent questionnaires on the implementation of forestry education in those units (Order No. 41 of the Director General of the State Forests). In response, 440 questionnaires were received.

After analysis of the above mentioned surveys the series of trainings at the national level for forestry education leaders were organized. There were five meetings involving about 80 people. Training topics related to, i.e. methods and techniques of working for different age groups, creating environmental educational projects, ways of creating the image of the forester and the methods of seeking allies and sponsors of educational activities.

The team then developed a draft document ordering forestry education in the State Forests. The first is – „The guidelines for the development of forestry education in the society in the State Forests”. This document is a hierarchy of specific tasks and assigns them to the relevant administrative levels of the State Forests, i.e. , the Forests Districts, the Regional Directorates and the Directorate General of the State Forests. The second document is a „Forestry education program in public the Forest Districts”. This document establishes the framework for the creation of a special forestry education program for the Forest Districts, which include:

- Minutes of the commission meeting concerning public forestry education program in the Forest Districts;
- Characterization of the natural forest of education;
- Forestry education facilities;
- Partners in forest education;
- Educational publishers in the Forest Districts;
- Annual plans of educational activities;
- Annual reports of educational activities;
- A summary of educational activities in the Forest Districts for the past 10 years.

Both of these documents came to the practice by the Director General of the State Forests Decree No. 57, in May 9th, 2003.

As a help in the implementation of the regulations the team has developed „The manual for forestry education”. This publication is in the form of thematic books. Booklets contain, i.e. a history of forestry education, instruction of creating the educational path, the instructions of the forest classes, the topics of classes in the forest, etc.

The development of forestry education in the State Forests

Based on data collected in surveys in 2002 and a report of educational activities in the State Forests in 2007, a huge progress in the field of forestry education in the State Forests is seen.

In public education attended:

<table>
<thead>
<tr>
<th></th>
<th>2002</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest manager</td>
<td>67</td>
<td>360</td>
</tr>
<tr>
<td>Deputy forest manager</td>
<td>123</td>
<td>348</td>
</tr>
<tr>
<td>Forest supervisor</td>
<td>158</td>
<td>384</td>
</tr>
<tr>
<td>Specialist, department manager</td>
<td>457</td>
<td>1055</td>
</tr>
<tr>
<td>District forest manager and deputy</td>
<td>1411</td>
<td>4678</td>
</tr>
<tr>
<td>Ranger</td>
<td>34</td>
<td>468</td>
</tr>
<tr>
<td>Forest trainee and other</td>
<td>139</td>
<td>272</td>
</tr>
</tbody>
</table>

The data from two reports shows that the largest group of forestry educators are the District Forest Managers and their deputies. A major contribution to forestry education are also specialists, department managers and forestry technicians. This situation derive directly from the structure of employment in the State Forests as well as the generally accepted principle that District Forest Managers „attend” forestry education in schools territorially belonging to their Forest Districts.

Worth noting is a fact of large interest and
personal involvement of District Forest Managers, their deputies and supervision engineers in forestry education in the Forest Districts.

The survey in 2002 showed that, for forest education were created:
- 24 educational centres;
- 28 forest exhibition rooms;
- 65 educational classrooms;
- 20 reading-rooms;
- 369 educational paths;
- 140 permanent collections.

However, in the report of 2007 is already mentioned about 40 educational facilities, 235 forest exhibition rooms and 833 forest educational paths, and as more report shows the existence of 458 educational breezways, so-called green classes.

The report also gives information, that the Forest Districts collaborated with 7872 various schools in 2007. Schools and teaching environment is a natural partner in the educational activities of the State Forests. An offer prepared by the Forest Districts, often with the participation of teachers, here goes on fertile ground and directly in the demands of schools pursuing formal education, particularly in the natural sciences.

The most common form of forest education are field classes and tours in the forest with a guide (Fig. 1.). In this case, from forest ranger-guide is required not only the substantive knowledge, but also teaching skills. Lessons are conducted using local educational facilities, mostly educational paths and the selected areas, such as nursery, an interesting stand, or nature reserve.

The educational activity reports show that outstanding are „lessons in the forest exhibition rooms”. This form of education is gaining importance, because in the past few years we can observe a dynamic growth of the number of forest exhibition rooms building in the Forest Districts and adapted to teach.

Another important form of forestry education are classes conducted by foresters in schools. Most of them are the lessons of nature, environment, or the biology of forest management topics such as the forest fire protection, nature conservation or management of forest resources, in Poland and the whole world. Sometimes, during the lessons foresters say about their profession and forestry work. In the whole country, in 2007, foresters conducted 4.9 thousand lessons in schools.

Mostly in primary and secondary schools. Participated students were nearly 217 thousand. Forest art, photographic, literature and natural-forest knowledge competitions are very popular among children and young pupils, as well as with their teachers and educators. An additional draw for the participants to this form of education are awards funded by Forest District, Environmental Protection Funds and other sponsors. These awards are usually books, but sometimes also group tours to the forest trail with forester.

Impressive is also the total number of participants in all forms of forest education. In 2007 it exceeded 1.7 million, the majority were children and adolescents from primary schools (7-12 years old) and high school students (12-15 years old) (Fig. 2.).
In addition, the State Forests has created over 2100 projects with media representatives and more than 2350 projects with other subjects (local governments, fire service, landscape and national parks, NGOs). The data contained in the reports shows that the vast majority of the Forest Districts collaborate with environmental education centres, landscape and national parks. In this case, we are often faced with a situation where several Forest Districts are working with the same subject, which in practice helps to maximize the educational effect. This situation also applies to cooperation with NGOs on environmental profile, which includes, inter alia, Eagle Conservation Committee, Polish Society for the Protection of Birds (OTOP), Forest Friends Association and Naturalists' Club.

State Forests undertook the organization of the following projects in year 2007:

<table>
<thead>
<tr>
<th>Number of undertakings</th>
<th>Number of participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educational meeting</td>
<td>1 901</td>
</tr>
<tr>
<td>Forest competition</td>
<td>1 374</td>
</tr>
<tr>
<td>Educational campaign</td>
<td>2 623</td>
</tr>
<tr>
<td>Exhibitions</td>
<td>473</td>
</tr>
<tr>
<td>Other (fetes, fairs)</td>
<td>X</td>
</tr>
</tbody>
</table>

* : estimated number

Significant share of the educational activities of the State Forests has 57 Forest Districts belonging to 19 Promotional Forest Complexes. Promotional Forest Complexes (PFC) are functional areas of ecological and social significance. Environmental education of society is one of the major tasks assigned to those areas since the beginning of their existence (1994).

The Forest Districts of the PFC are usually more „saturated” with educational infrastructure than the Forest District outside the PFC. This applies especially to the location of centres of education, to a lesser extent, forest exhibition rooms, green classes and educational paths. At the average PFC’ Forest District turnout of participants of education was three times higher than in other Forest Districts of the State Forests in 2007. This translated into a greater number of properly completed forms of education - outdoor activities (2,6 times), educational meetings outside school (2,7 times), lessons in forest exhibition rooms (6,4 times), educational exhibitions (5 times more).

To the forest education of the public in the PFC’ Forest District is involved the same number of employees (average 18), as in the Forest District outside the PFC, but the „educational” posts in the State Forests (50-100% of the time working in education) are almost entirely in the PFC, and most are assigned to the centres of forest education.

In 2007, the State Forests spent on public education 15,7 million zl (1 euro = about 4 polish zlotys), but the amount does not include salaries of staff involved in education.

<table>
<thead>
<tr>
<th>Sources of income</th>
<th>Amount (thousands zl)</th>
<th>Share (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prime costs of Forest District</td>
<td>11 731,1</td>
<td>74,5</td>
</tr>
<tr>
<td>Forest fund</td>
<td>499,2</td>
<td>3,2</td>
</tr>
<tr>
<td>National budget</td>
<td>1 661,3</td>
<td>10,6</td>
</tr>
<tr>
<td>Provincial Fund of Environment Protection and Water Management</td>
<td>1 346,9</td>
<td>8,6</td>
</tr>
<tr>
<td>National Fund of Environment Protection and Water Management</td>
<td>95,5</td>
<td>0,6</td>
</tr>
<tr>
<td>Other sources</td>
<td>401,6</td>
<td>2,5</td>
</tr>
<tr>
<td>Overall</td>
<td>15 717,0</td>
<td>100,0</td>
</tr>
</tbody>
</table>

From the State Forests' financial amount spent on educational activities in 2007, it was funded primarily:
1. the creation, maintenance and equipping of educational centres in PFCs, forest exhibition rooms, forests paths and other educational facilities,
2. purchase of teaching materials and resources to carry out forestry education, including tables, publications, equipment for observing nature, audiovisual equipment,
3. preparing and printing its own educational publishers - folders, guides and maps.

Directly in the educational activities of society are involved: the Forest Cultural Centre in Goluchow (240 thousand participants in various forms of education), Kostrzyca Forest Gene Bank (over 3400 participants of education) and the State Forests Information Centre. There is also a huge number of publications bearing the logo of the State Forests: „Hope is green”, „Forests in Poland 2007”, „Manual for forest education”, „Voice of the Forest” and „Forest Echo”.

Forestry Education in the Forest District statistically
From the calculations based on data contained in the reports of the educational activity emerges a picture of the average - in terms of statistics - educational Forest District of the year 2007. On average 16 employees each Forest District is committed to the public forestry education. The forest education uses primarily the forest educational paths. Other usable facilities such as nurseries, seed stands and conservative stands are commonly used for educational purposes. Also natural sites not directly related to forest management, such as nature reserves, parks and dendrological gardens. More than half of the Forest Districts (235) has its own forest exhibition room.

In year 2007 in various forms of forestry education organized by a Forest District participated more than 4 thousand people. These were mainly school children and adolescents aged 7 to 15 years (67,1%). Participants often used field classes and trips with a guide. Many educational events organized within the Forest District, such as Clean Up the World or Earth Day were also very popular and drew up many people. The statistical Forest District conducted in that year 32 field lessons, involving a total of 1,2 thousand people. Forest District staff conducted 13 classes in their own forest exhibition rooms for 464 persons and 11 lessons in schools for 503 students. In addition, four lectures were delivered at a forum of self-government, or at a rural meeting for 158 auditors.

Forest District has prepared three forest competitions (natural science, art), and each of them attended an average of 103 people. In addition, it organized or co-operated with organizing of six educational events such as Earth Day, Clean Up the World, and winter feeding animals, etc. In one such action were involved an average of 144 people. Statistically speaking, each Forest District mounted an exhibition of drawings, paintings, photographs, exhibits, etc., which was visited by an average of 441 people.

In other forms of natural-forest education organized by the Forest District (for example, stands at the fairs and festivals, mushroom hunting, consultations with writing research papers) attended by more than two thousand people.

The statistical Forest District cooperated in 2007 with 18 schools, with two, rarely one environmental NGO. Every second Forest District cooperated with landscape or national park.

In order to promote events, education and knowledge of the forest every Forest District maintains contacts with one or two local newspaper editorial boards, and two of every three Forest District cooperate with the radio station and television station.

Regional Directorate of Zielona Gora as an example of forestry education
Regional Director in Zielona Gora imposed an obligation on all Forest Districts in RDSF Zielona Gora to run public forest education, with particular emphasis on children and adolescents. Accordingly the foresters are required to appoint from among the Forest District staff a person responsible for conducting education at Forest District, which also will participate in internal training courses to raise their skills in this regard.

The task of public forest education is carried out in RDSF Zielona Gora, through:
1. Leading a continuous (annual since 1997) and common, to all Forest Districts, forestry educational campaign called „Spring without a flame” (educational project), in which foresters allies in the campaign are: the State Fire Service, representatives of the Church, local
2. Operating in the PFC „Bory Lubuskie” the „Nature-Forest Education Centre” with regional range, operated by the forester and the educator. This Centre leads in region in terms of public forest education. Here are held annual meetings of educational leaders from all Forest Districts and trainings for them, as well as workshops for teachers organized jointly with the In-service Teacher Training Centre in Zielona Gora and other outside educational activities for society and inside, for foresters.

3. Organization of natural-forest paths. Above name is used, because in addition to knowledge about the forest and forester's work, they represent the local values of nature, often local attractions, historic landmarks. In each Forest District exists, at least one and often two or more paths. To those paths are compiled guides that also serve as promotional materials of forestry. It is worth stressing that in order to finance the construction of paths, foresters cooperating with municipalities and local sponsors.

4. Forest Districts run their own competitions and education-promotional events, aimed to the schools in their area, such as competition for pupils „We learn the forest”, jointly organized by Nature-Forest Education Centre and schools of Zielona Gora, „Live in harmony with nature” which has been organized jointly with the Forest District Zielona Gora and Primary School nr15 in Zielona Gora, „Forest Youth Games” organized by the Forest District Swiebodzin for all the schools in their area, etc.

5. For the each school there is assigned a forester, whose task is continuous cooperation with the managing and organizing education.

6. Implementation and emissions of films dealing with forestry, nature and distribution of video cassettes to all schools in the area of Regional Directorate at the State Forests (RDSF).

7. Working with schools in the organization events with a national range, as the „Clean Up the World”, „Earth Day”, „Holiday of the Tree”, „Clean forest”.

8. Distribution to all schools and institutions selected journals „Explore the Forest”, „Forest-Human-Future”, „Polish forest”.

9. Constant cooperation with the In-service Teacher Training Centre in Zielona Gora in the yearly (since 1999) trainings and workshops for foresters and teachers, raising their knowledge and skills in the matter of natural-forest education of children and adolescents, using the educational infrastructure created by the foresters in the woods of RDSF Zielona Gora.

10. The cooperation agreement with the University of Zielona Gora was signed by RDSF Zielona Gora, by which student activities are carried out in the field. Also a list of thesis carried out in the Forest Districts for the coming years was developed.

11. Constant cooperation with the Provincial Fund for Environmental Protection and Water Management in co-funding educational projects.

Forestry education - ideas for the future

Although forestry education is well-conducted by the State Forests, there still is a need for the development. It should begin in integrating it into the core program for polish schools. In the regulation of the Minister of National Education of 23 August 2007 regulating the core curricula, there is not even the word „forest”, and further more environmental education itself is to be conducted only from the fourth grade of elementary school. To begin the changes in that regard, Forest Friends Association has created a draft of proposed changes to the „Act of forests”. This project defines in detail the forestry education as a „set of actions for the education of children, adolescents and adults, and teacher education and training, designed to take into account the forest subject area in the teaching of nature, biology and environmental education”.

The opportunity to develop forestry education are also forestry education programs, prepared by District Forest Managers for 10 years under a forest management plan. Partial annual plans that are a part of those programs, regard to the construction, expansion and management of forestry education sites and preparation of forestry educational projects.
It is important that plans were created after an earlier examination of the needs and expectations of the schools and to verify their implementation. Valuable helpers in the right satisfying the educational needs may be methodological advisors who can activate an experience intellectual potential of the foresters in the field of forestry education. The use of educational facilities should be also improve. These objects are often used in an appropriate way, since knowledge about the capabilities of the infrastructure is inadequate disseminated among teachers.

The forestry education in schools in large urban areas requires special support. Reaching the teachers in large cities and to acquaint them with the existing educational offer requires the establishment of the metropolitan teams of experts, to work where the representatives of the State Forests and methodological advisors will be invited. There should be organized field classes for teachers, especially from large cities, showing the practical possibility of using the database of State Forests, in particular for the purpose of the Green Schools. A requisite condition for use the State Forests’ infrastructure by metropolitan schools is to assist in obtaining funds to carry out outdoor activities, in particular, to cover transport costs.

It should be stressed that such a dynamic development of forestry education is made possible by excellent cooperation with other institutions. This cooperation is valuable and we should care for its development, and what is most important, this cooperation offers the ability to create and implement innovative programs conducive to the diversification of form and content of forestry education.

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SUMMARY WRITING IN TEACHING ENGLISH FOR SPECIFIC PURPOSES

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Abstract

The aim of English language teaching is to improve the four skills: listening, speaking, reading and writing. Very often, due to time constraints, it is a challenge to integrate the development of writing skills in the curriculum. A possible solution is the summary format as it is conveniently short but nevertheless it allows learners to demonstrate understanding of a text’s main ideas and ability to present them in an organized way while using suitable style, appropriate vocabulary and correct grammar. Summary writing in the context of teaching English for specific purposes at the University of Forestry in Bulgaria is a learning task performed on the basis of reading and listening comprehension activities with texts or recordings related to the respective scientific area of interest (forestry, landscape architecture and etc.). Teaching summary writing involves a dynamic process in which the learners are encouraged to critically assess the information and think of logically constructed summaries. To achieve this, summary writing entails class discussions and comments of examples which are conducted in English with advance level students. Thus, the synergy approach to writing ensures the high motivation of both the learners and the teacher to successfully complete the writing tasks. Some of the teaching techniques for writing efficient summaries are, among others: studying the style of summary writing of scientific Bulgarian and English texts, writing a summary in English and another one in the native Bulgarian language of the same text/recording and writing summaries of texts/recordings with different lengths.

Key words: summary writing, ESP

Introduction: the practice of language training at the University of Forestry in Sofia

At present, the organization of the language training at the University of Forestry in Sofia is on the basis of the students’ field of study. That means that the students are not grouped with regard to the level of their language skills. In this way it is common to have students at A2, B1, B2 and C1 levels in one group. The groups, on average, comprise of 15 students, and the teacher follows a curriculum which ensures that these mixed ability students will be able to pass the course requirements while at the same time they are motivated to study. In short, according to the curriculum, the students have to learn an obligatory list of specialized vocabulary and to make class presentations. The class tasks are focused on grammar exercises and translation of texts which often require assistance on the part of the teacher. There are also end-term grammar tests which, on the whole, show unsatisfactory results, sadly, bringing frustration to the diligent students. Therefore one important question facing me, as a teacher, is how to teach grammar effectively?

Though this question is ‘eternal’ for language teaching, and solutions will only be true for a particular situation, the students at the University of Forestry seem ‘happier’ when they are involved in practicing the productive skill of speaking in the delivery of presentations. In my case, the presentations have demonstrated good acquisition of the language necessary for the description of tree species. At the same time when the students have chosen their own presentation topics, which often are very scientific in nature, they have been able to make good presentations from a lexical and grammatical points of view. The very fact of language production seems to motivate the reception of lexical and grammatical constructions. This has led to the idea of incorporating the other productive skill, writing, in the curriculum. Before presenting the learning task of summary writing, the practical significance of some types of summaries will be discussed.

1. Types of summaries for practical purposes
1.1. Abstracts

Abstracts are an academic piece of written text. In essence, they are a short summary of the completed research. The format of writing abstracts is of practical significance to those students who intend to conduct research. However, it should be noted that the graduate students (studying for a master’s and PhD degree) at the University of Forestry present a thesis, and there have been opinions that these theses must contain an abstract in English. The final
part of this paper will attempt to show some basic guidelines for writing abstracts in English.

1.2. Executive summaries and other types of summaries for business purposes

Working in a business environment requires the preparation of executive summaries of reports. Many documents written to present policies and strategies also contain executive summaries. Though this is a longer form of summary, the general principles remain the same. Along with these, the future professionals in companies will have to be able to submit in writing various data and information in a concise form such as notes from meetings, information about products, suggestions for innovations and etc. The dynamic businesses favour short forms of writing.

1.3. Book reviews

Because of their popularity book reviews are excellent to illustrate the main feature of all types of summaries: their informative nature. In a book review, of course, the aim will be to give the reader a general idea of what a book is about, and to sell the book. Writing summaries in a learning environment is a task important for achieving teaching goals in the context of synergy approach to learning that will be discussed in the later parts of this paper.

2. Writing summaries

2.1. The summary as a learning task

The aim of this paper is to present an approach to developing the writing skills of mixed ability groups of students with the purpose of developing their language performance, and, in particular, improving their grammar understanding and acquisition.

To do this the summary as a form of written text has been identified as useful and convenient. The reasons for this choice are the short length of a summary, and, therefore, the time required for writing a summary of a familiar text.

For students who have English once a week for 2 hours, it is possible to read a text and have the written summary for the time of the weekly classes. Moreover, re-writing and editing are also not a threatening task as the student summaries are usually about 100-250 words long.

To write effective summaries the students are told to concentrate only on the main ideas of the text. Thus, the focus of the learning task is content rather than form [1]. In this respect two strategies depending on the particular group of students can be adopted. With advance level groups the texts are discussed in English. Initially in the process of teaching summary writing, this usually takes place as a preparatory step; later, as the students acquire confidence and experience, this can be done as a post-writing and pre-rewriting exercise. The second strategy applies for students with unsatisfactory knowledge of English or below the threshold proficiency level for efficient writing [1]. The discussions in these groups are conducted in Bulgarian.

The table below shows the steps of the summary writing task in the context of language teaching.

<table>
<thead>
<tr>
<th>N</th>
<th>Steps</th>
<th>Time of activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Reading (and translating) the text to be summarized</td>
<td>varies by group and text</td>
</tr>
<tr>
<td>2</td>
<td>Discussion of text ideas</td>
<td>20 min</td>
</tr>
<tr>
<td>3</td>
<td>Writing the summary</td>
<td>20-30 min</td>
</tr>
<tr>
<td>4</td>
<td>Discussion of the effective summaries of the particular text</td>
<td>20 min</td>
</tr>
</tbody>
</table>

2.2. Common mistakes of students

It is very common for students to write a summary by just copying sentences from the original text. Although this might be somewhat acceptable for students at a pre-intermediate level as a first draft, students need to be encouraged to use their own words to summarize the texts. Besides, it is not uncommon for advanced level students to copy from the original text when writing a summary. To help students overcome this problem, exercises on paraphrasing and linking ideas can be useful.

Another mistake is the focus on details. Usually, the students disproportionately organize their summaries by devoting 2/3 of them to the first 1/3 of the text, and then summarizing the greater part of the text in the final 1-2 sentences of the summary. The students often feel the urge to show they have understood the text and tend to give too many details. This problem is easy to solve: after the discussion of effective summa-
ries most students are able to identify only the main ideas.

A third mistake that some students make is to express an opinion on the summarized content. For example I had a group of students in Landscape Architecture who had the task to summarize an article on the garden preparations for winter. Several students concluded their summaries by saying their opinion for the techniques and activities for garden winterizing discussed in the text.

These three types of mistakes are related to the summary writing process which is not different in a learner’s native or second language. Below are discussed some implications of the summary writing task directly related to the teaching of English.

2.3. Synergy approach to summary writing

A particularly difficult area of the English language teaching for the students at the University of Forestry is the grammar. It is believed that the receptive skill of reading practices and enhances the level of understanding of the grammatical structures of the English language. The second step in the process of developing grammar competence, the production of written summaries, enables the students to demonstrate the acquisition of the grammatical structures they have encountered in the texts. As the students at the University of Forestry write summaries on the specialized texts from the reading comprehension exercises, the development of grammar competence is observed in the course of time. Writing summaries builds up the student’s confidence in understanding and using correct grammar.

Another point to consider is blending the teaching of writing and speaking skills. As it has been pointed out above, the discussions of the original texts to be summarized, and, at a later stage, of the written summaries are conducted in English with advance level students. Planning speaking activities is never an easy task as adult students are reluctant to discuss hypothetical situations. However, motivated students are very willing to engage in discussions that are focused on solving an immediate task or expressing an opinion on a real issue. In this sense, writing summaries can be a good starting point for a speaking exercise.

2.4. Additional task for advanced students of English

This idea has been suggested by Ekaterini Nikolarea from Greece who teaches ESP at the University of the Aegean. The additional task involves writing two summaries of a text: one in the native language and one in English. Due to time constraints this task have not been applied in the language teaching at the University of Forestry; however, it makes sense to require students to write a text summary both in English and Bulgarian, and to draw conclusion about the development of their native and second language.

3. Comparison of the principles for writing abstracts in Bulgarian and English

Below are 4 examples of abstracts: two in Bulgarian and two in English:

**Example 1:**

В настоящата разработка са формулирани и класифицирани проблемите на управление на устойчивото развитие на производствените системи от дискретен тип. Въведени са основни понятия и определения, въз основа на които е представена постановката на задачата и информационния модел. Показани са някои от по-важните тенденции при управлението на устойчивото развитие на производствените системи в глобална среда. Представени са възможностите за автоматизация на дискретните производствени системи и тяхното управление. В резултат на това са направени изводи и заключения за приложимостта на разработката.

**Example 2:**

Представените принципните постановки на базата, на които е разработена Система от балансирани показатели за оценка усъвършенстването на управлението и организацията на производство в мебелните предприятия чрез приложение на ИТ. Представени и анализирани са резултатите от апробацията на системата в мебелни предприятия в България. Аргументирана е приложимостта на системата като механизъм за мониторинг, оценка и управление на ИТ като активи.
Example 3:

Replicated circular openings ranging in size from 0.1 to 1 ha were cleared on a Sierran mixed conifer forest in 1996 at the Blodgett Forest Research Station, California and planted with seedlings of six native species. After 3 years of growth, heights of all trees were measured and analyzed according to species, opening size, and location within the opening. “…” However there were important differences between species in the nature of the co-limitation. Giant sequoia growth was most sensitive to light and water availability. Together they explained more than 47% of the observed variation in giant sequoia height. In contrast, only light was a significant predictor of ponderosa pine performance. Douglas-fir heights were significantly related to both light and water but there was more unexplained variability in the Douglas-fir model compared to the other species. These highly controlled experimental group openings provide a standard reference for silviculturalists using the group selection method of regeneration.

Example 4:

Non-industrial private forests (NIPFs) and public forests in the United States generate many non-market benefits for landholders and society generally. These values can be both enhanced and diminished by wildfire management. This paper considers the challenges of supporting economically efficient allocation of wildfire suppression resources in a social cost-benefit analysis framework when non-market values are important. “…” These challenges present serious impediments to adapting price-based decision-support tools to accommodate non-market values and support decision-making consistent with contemporary federal wildfire policy. Departure from the historic range and variability of ecological conditions is proposed as a complementary framework to support wildfire management decisions when non-market values are important on NIPF and public forestland.

The following guidelines for writing abstracts can be given (Dodd, e-resource).

The abstracts of research papers include:
- problem statement or statement of the purpose of the research;
- methods/procedure/approach used;
- principal findings;
- major conclusions.

The abstracts of review papers include:
- statement of the topic and the scope;
- the sources reviewed;
- major conclusions.

The length of abstracts may vary (as journals have different requirements) but between 80 and 300 words is usually considered adequate. Typically, abstracts consist of one paragraph.

Conclusions

The conclusions drawn are as follows:

1. Writing summaries is a useful activity which can successfully be integrated in teaching English for specific purposes.
2. Writing summaries can be a good way to teach grammar understanding and competence as well as a starting point for speaking activities.

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INFORMATION TECHNOLOGIES AS A TOOL FOR CHANGES IN CONSUMER BEHAVIOUR

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Abstract

The article describes today’s changes in consumer behaviour. Author shows differences between hopping in real market and in electronic environment of Latvian consumers. The research is based on analysis of statistical data, on survey done by Public Opinion Research Centre of Latvia as well as researches done by the authors. These researches give an overview concerning the basis of purchasing behaviour and give an insight into the variety of relevant characteristics of consumer behaviour. Authors clarify where consumers are looking for information about product, their shopping frequency, price evaluations and comparing habits, buying volume and time. Most important benefits of the shopping process at traditional buying process is the process of purchasing and human contact, but for e-shopping drivers are money and time saving, conveniences and all around a clock. Very special role in the article is devoted to the generations of the society in Latvia and the Europe what would help companies and individuals to work more efficiency in distribution of goods and services in the local market.

Key words: consumer behaviour, consumption, generations, real market, electronic market, information technologies

Introduction

Objective of the paper: is to analyze customer behaviour and find out the peculiarities of behaviour caused by information and telecommunication technologies.

Research methodology: The authors employ well-established quantitative and qualitative methods of research: grouping, analysis, statistic method, etc. The theoretical and methodological background of the research is formed by scientific researches and publications, publications from mass media and professional literature, statistical information from legal institutions as well as information collected by research companies and the authors during the survey.

Research problem, novelty and relevance: Informational technologies have a serious effect on consumer behaviour tendencies. The established accessibility of information technologies, implementation of various e-tolls, like e-signature etc., external factors and individual interests have stimulate consumers and enterprises to use informational technologies for everyday activities, including purchasing. As a result customer consuming manner is changing. These changes the authors have identified and analyzed. The authors’ contribution of this research is the analysis of impact of different external factors on consumer behaviour.

Research object: The research object is particularities of consumer behaviour driven by generations and informational technologies as well as different external factors what influences the consumer behaviour.

Research aim: The aim of the paper is to find out changes in customer behaviour caused by information technologies as well name and group the factors what influences customers in real and electronic environment.

Research tasks: Research goal was achieved through the solution of following tasks:

− Analysis of statistical data of IT area,
− To evaluation of different generations in the local market,
− Analysis the results of the surveys.

1. Statistical background of the research

According to the statistical information from all active Internet users 96,1% are looking for information or using on-line services, 86,1% using the Internet for communication, 49,6% for collaboration with state institutions, 44,9% for buying or selling goods and services including financial services, and 25,2% for education and study[8].

National media research for Internet audience done by TNS Latvia in spring 2008 established that more than 1/3 of Internet users have recently purchased, ordered goods or services via Internet. According to the research results almost one half of all Internet users live in the capital and 14% of them admitted that during the last half year they have purchased the tickets in the Internet and every tenth respondent had purchased telecommunication and Internet
services in the Internet, but every ninth respondent had purchased office or computer techniques/devices. Every seventh had purchased a phone, every third – press subscription, household equipment and electronics [17].

Information technologies have a serious effect on consumer behaviour tendencies. The established accessibility of Information Technologies, wide activities of national stimulation, for example introduction of e-signature, usage of e-environment at public sector – all these factors stimulate consumers and enterprises to use information technologies, and as a result consuming manners are changing. These changes the authors are going to identify and analyze within the research.

By analyzing internet usage activity in Latvia, we can observe that from all population 96,1% are using the internet for information search and on-line services, 86,1% - communicate via the internet, 49,6% - uses the internet for collaboration with national or regional government institutions, 44,9% - for buying or selling goods and services or financial services, 25,2% - for education and study. Most popular mentioned goals for these activities are: visiting web, using e-mail, using search engine, looking for particular information in any data base or reading Latvian newspapers or magazines in web versions. According to mentioned goals the authors can presume, that websites and search engines should become very popular. Therefore, according to latest statistical data form all world-known search engines and information exchange portals the most popular in Latvia in 2007 were Google (international brand), then Inbox, Delfi (Latvian national brand), Draugiem (Latvian national brands).

2. Consumer behaviour: theoretical background and generations

There are two basic meanings related to consumers: consumer behaviour and buying behaviour described in the theory of marketing. Both meanings are very close and important for business, as we presume that the consumer is the target of every action done by the company in the market. The authors would like to analyze these meanings and show common and different aspects of them.

There are a lot of definitions about consumer behaviour. A lot of them are very close in meanings. Therefore, the authors collected some of definitions and analyzed them.

The American Marketing Association defines consumer behaviour as: „The dynamic interaction of affect and cognition, behaviour, and environmental events by which human beings conduct the Exchange aspects of their life“ [3]. Consumer behaviour involves interactions between affect (emotions, specific feelings, moods and overall evolutions) and cognitions (interpretation of the environment to create meanings which guide behaviour), behaviour, and environmental events.

After the deepened analysis of the definitions the authors concluded that all definitions generally describe responses to products, mental, emotional or physical process, action and thoughts, feelings and experience. These definitions are oriented on buying and consuming process and describe psycho-emotional process. At the same time Post Soviet countries, who became independent just more than 15 years ago (Latvia become independent country on 1991), are very good example for description of consumer behaviour not just from buying perspective.

In today’s turbulent everyday activities we sometimes forgot to pay attention on diversity of our customers. Generations are changing, habits are changing, but some companies are still applying the same methods for the motivation of consumers. What is suitable for one target group doesn’t work for other. In the classical marketing and management literature consumers usually are described according to the age, gender, social and economical status etc. At the same time there are lack of information about different attitudes of age groups and genders to the market and marketing activities.

The authors also would like to emphasize that electronic market becomes more and more popular for many activities – information search, banking, shopping, mailing, etc. From the all of population the most active part in the electronic environment is new generation. They are familiar with technologies, used to use the internet, computers etc. New terminology has arisen for description of generations.

For example, the term N-Gen was first used to describe this wave of youth in an article by Don Tapscott [4] in Advertising Age. At that time there was a lot of debate about whether or not the Internet was an effective place to advertise. Don’s conclusions were affirmative, but cautionary. On the Net, one has to advertise differently. N-Gener using new media have a new
set of expectations. This generation is different from the previous generations with different characteristics and features. Commonly held views of the current generation are that they are greedy, self centered and concerned only about their personal possessions and financial success [4]. At the same time there are wide field for researches and investigations, because entrepreneurs should know their customers by hart.

After spending the better part of a year talking to hundreds of N-Geners, the research team has come to a different set of conclusions. Many have observed that the young are still very obsessed with material values, more than their parents before them. An uncertain future looms ahead, and they cannot pride themselves with the material security which seemed to be the trait of the baby boomer age. Prized possessions become a material fortress against economic insecurity - material goods are not a vice, they are a refuge. Young people are navigators. They have set their ship out onto the Net and have returned home safely, carrying riches. They also know that their future cannot be trusted to anyone else, no government or corporation will ensure their future [4].

This generation is analyzed in different researches done all around the world, but the authors would like to emphasize following most important criteria what characterizes this generation:

- They are courageous, self confident and skilled in technologies;
- They value highly individual freedom and rights;
- They are globally oriented and multilingual;
- They value time saving and conveniences.

For e-business it is a challenge to inveigle this type of consumer into the business as consumer. According to Philip Kotler our future is holistic marketing. This new paradigm combines the best of traditional marketing with new digital capabilities to build long-term, mutually satisfying relationships and co-prosperity among all key stakeholders [9].

Today society is on the way to the holistic marketing and using classic traditional models and methods in the electronic environment. Smith and Chaffey [15 name it as e-marketing. According to them, simply put, e-marketing involves marketing online whether via web sites, banner ads, opt-in e-mail, interactive kiosks, interactive TV, mobiles or m-commerce – the e-tools [15]. It involves to getting close to customers, understanding them better and maintaining a dialogue with them. It is boarder than e-commerce since it is not limited to transactions between an organization and its stakeholders, but includes all processes related to the marketing concept [9].

Some other researches also have been done. The majority of today's Net Generation is actively personalizing their digital experiences and sampling niche content and video with increasing frequency. That was the key finding in our first annual Avenue A | Razorfish Digital in July 2007, Avenue A | Razorfish Digital surveyed 475 U.S. consumers across all demographics and geographies to understand their desires, frustrations and digital consumption habits. Our design research team was most concerned with digital behaviour rather then demographics. They wanted to know [13]:

- How the broad populaces of "connected consumers" discover things?
- How quickly do consumers adopt emerging technologies and user interface conventions (tag clouds, social media, etc.)?
- What drives consumers’ desire to purchase (or not) online?
- How has video changed the digital landscape in recent years?
- Are mobile services being widely used (or not)?

The answer, they have found, is that the majority of Net Generation are increasingly personalizing their digital experiences and sampling a wide range of digital niche content. From recommendation engines, to blogs, to customize start pages, today's connected consumer navigate a personal landscape that is much more niche than we ever expected. Survey confirmed that personalization has hit the mainstream.

Most tellingly, 91% of consumers rely on the Web to get current news or information, vastly eclipsing more traditional outlets such as television. No wonder why broadcasters and newspaper publishers are struggling to adapt in today’s digital realm [13]. According to the results of these surveys the authors would con-
include that for net generation time saving and overall conveniences is a core value. They are loyal and faithful to electronic media and most important motives for adoption of any e-tool could be voluntariness of use, image, compatibility and opinion of the peer group.

Generation „Y”, sometimes referred to Generation „Why”? This cohort ranges in age 19 to 29 years, encompassing those still in high school to new graduates establishing themselves in the work force. Generation Y keep their options open rather than commit to career, marriage or having children. However options come with the downside of greater expectations and feelings of the need to achieve quickly. Generation Y are the children of the Baby Boomers, often described as over parented, over indulged and ‘me’ centered (McRae et. al., 2006). Generation Y have been described as street smart, mature, resilient, practical, optimistic, ambitious, confident and manipulative (Sheahan, 2005; Huntley, 2006). They are an aware generation, culturally, socially, environmentally and emotionally in an age of uncertainty (Sheahan, 2005). As a result they are lifestyle centered in search of meaningful experiences, motivated by more than money, are materialistic, success driven and image conscious (Sheahan, 2005). In addition they are the most educated generation in history, the most entertained and materially endowed, and the first generation of digital natives (McCrindle Research, 2007). As a result this is also the first post literate generation where visual stimulus and interaction is valued more than written word (Grose, 2005; McCrindle, 2008c) [7].

Generation X are 29-44 years old and they want a portable career and need feedback, but hesitate to ask for it. They want balance now, not when they are 65. They are attracted by the visual, musical and dynamic, work on multiple levels at once, holistic – very aware of the entire operating environment of the product and companies involved etc.

The Baby Boomer cohort was a result of increased births following World War II. This generation, born 1946-1964, is currently between 44 and 62 years of age (McCrindle Research, 2008). This generation’s social markers included the advent of television, rock and roll music, the Cold War, the threat of nuclear war and introduction of decimal currency (McCrindle, 2008d). To Boomers life is sequential, moving from one level to the next, having experienced a mostly linear lifestyle – from childhood, to secondary education, moving onto work or tertiary education (and then work), marrying, having a family and are now moving toward retirement (Salt, 2006). Baby Boomers are ‘idealists’, always striving for a better way of living, being the first generation in an era of almost seamless prosperity and economic growth. In the workplace, Boomers ‘live to work’, and created the 60 hour working week (McKay, 1997). As a result many are workaholics with an overwhelming need to succeed at any cost, sacrificing personal life for professional goals (McKay, 1997). Boomers have a strong work ethic, are optimistic, loyal and committed employees.

Traditionalists (Silent Generation) identify with building a legacy at work and believe that no news is good news when it comes to their performance. They understand that „now” they can build a balance between work and home and are planning for retirement, they enjoy reading, don’t think of themselves as aging, believe in winning, they value security and longevity, value their grandchildren and will invest in the future.

Each generational cohort spans about 20 years. Each generation may have a number of smaller sub-generations. The last five generations of the Twentieth Century, and those which make up most of the current Latvian population, can be seen in table 1, below.

<table>
<thead>
<tr>
<th>Generation</th>
<th>Year of Birth</th>
<th>Age</th>
<th>Number of inhabitants</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Silent Generation</td>
<td>... - 1944</td>
<td>65- older</td>
<td>390 788</td>
<td>17</td>
</tr>
<tr>
<td>The Baby boomers</td>
<td>1945-1965</td>
<td>44-64</td>
<td>576 365</td>
<td>25</td>
</tr>
<tr>
<td>Generation X</td>
<td>1965-1980</td>
<td>29-44</td>
<td>474 709</td>
<td>21</td>
</tr>
<tr>
<td>Generation Y</td>
<td>1980-1990</td>
<td>19-29</td>
<td>349 209</td>
<td>15</td>
</tr>
<tr>
<td>Net Generation</td>
<td>1990- ...</td>
<td>0-19</td>
<td>479 823</td>
<td>21</td>
</tr>
</tbody>
</table>

According to the information in table No. 1, major part of Latvians is in generation „The Baby Boomers” or in the age 44-64. At the same time if we compare these data with information about their habits and different activities, for example, internet usage, one can observe that most active
internet users are „Generation X”, „Generation Y” and „Net Generation”. From the other hand „the Baby Boomers” are economically active inhabitants and generates most of the GDP (according to the statistics).

According to Jodi Rudic Baby Boomer generation is also very complicated from the marketing standpoint. This generation representatives believe that they know better than anyone else, therefore it is rather difficult to convince them. They’re not interested in products endorsed by people from other generations, or in products that are really geared for other generation. They distrust authority – so communicate benefits in honest, straightforward ways. They are very busy - want more, faster, convenient - don’t mind paying. Product needs to appeal to conspicuous consumption (e.g. brand labels on the outside) - they want to be seen to be buying class and quality, they value people with values etc. At the same time “Generation X” is completely different in marketing, behaving, etc.

Of course, there is always the question – can we apply international experience to the local market, because there are a lot of national particularities. At the same time there are no researches on generations done in Latvia, therefore it is logical to adopt the existing theories to the local market.

3. Survey on consuming habits of Net Generation in Latvia

With an aim to analyze differences in consumer behaving motives in real market and electronic environment, the authors organized survey in the age group 18-25. This age group was chosen because according to the statistical data in 2006 96% of inhabitants in the age between 16 and 25 were using the internet. Also this age group is called the Net generation in the scientific literature. The period of survey is November-December, 2008, the total number of respondents was 201, both sexes. The questionnaire contained 6 question groups all oriented on range of parameters. The resume of the survey is described below.

According to the survey the target group uses the internet tools for:
1. E-mailing (99%);
2. Information search (89%);
3. Social Portals, Peer Group activities (74%);
4. Online banking (68%);
5. Skyping (66%);
6. E-shopping (43%).

According to the results of this research and researches done before by other companies, e-mail is a leading e-commerce tool what is used by 99% of all internet users. These results clearly show interests of this target audience and simultaneously pay attention to e-sopping as upcoming activity. Therefore it is valuable to forecast how e-shopping could develop in the nearest future and what are motives, pros and cons for e-shopping in this target group.

This survey prescribes that benefits of the internet usage and e-commerce for the target group are:
- Speed (95%);
- Saves time (92%);
- Rational (help to facilitate many processes) (87%);
- Possibility to find more information at the same time (84%);
- Accessibility (can use everywhere) (76%);
- All around the clock (65%);
- Easy to use (63%);
- Always updated (actual) information (59%);
- Overall conveniences (56%);
- Possibility easy to compare products and prices (54%);
- Punctuality and accurateness (49%);
- All kinds of goods in one place (45%);
- Special (just online) offers (48%);
- Possibility to follow the execution of the order (34%);
- No paper what should be filled (26%);
- Environment friendly (no paper used, no sales materials, brochures etc.) (25%);
- Possibility to cancel order (19%).

From the results of the survey the authors can conclude that values for the target group are speed and time saving, conveniences, updated information, etc.

According to the authors point of view the results of the survey confirm that consumer behaviour is changing under the impact of new technologies and especially under the impact of the internet and e-commerce. The values of Net Generation are independence, speed of actions, independence, conveniences, economy of resources.

By analyzing comparing prices in the internet it is obvious that 55% of respondents always compare prices in the internet, but n the retail
stores just 45%. It can be explained by specific features of the internet and consuming behaviour (see Fig. 1.).

One of the most important questions was oriented on price comparing. It is well known that the internet allows compare price (it is called price transparency) very quickly. It is also mentioned in many researches as a priority of the internet shopping. According to results of the research 25% of respondents compare prices always, 39% - often, 24% sometimes (see Fig. 2.). By more detailed analysis of this trend it is obvious that older respondents compare prices more seldom than younger respondents. There are two explanations – first of all level of incomes (for younger respondents in this generation it could be lower) and secondly, older respondents form this generation has more experience and they already know (or at least think that they know) price and quality relations, price level and meaning of brand value.

By analyzing the choice of customer to purchase goods in retail store or in the internet shop and their habits to do it repeatedly, we can observe that there are the same trends. Consumers are shopping in those shops what they used to do of like more that others (see Fig. 3.).

During the research the question about products purchased in last 12 months in the internet and retail store were asked. In the internet most often were bought movies, computer games, and tickets (airplanes, cinema, theatre, and concert) as well as electronic devices and equipment. Form all respondents 65% were females, 35% were males; from all respondents 56% had higher education.

Research results were compared with researches done in Germany and United Kingdom. There were no large differences in results. Therefore the authors conclude that Latvian consumer are behaving as average European consumer but with displacement in time, what can be explained with development of national economy and historical particulates.

Changes in consumer purchasing behaviour caused a lot of alterations. The path of decision making from the problem to results under the influence of IT has become shorter in terms of time, nevertheless some new problems have arisen – the lack of social contact, safety measures in e-commerce, logistics etc. Most important benefits of the shopping process at traditional buying process are buying process, contact with equal and for e-shopping money saving, time saving, conveniences and all around a clock.

According to the research results the authors conclude that:
INFORMATION TECHNOLOGIES AS A TOOL FOR CHANGES IN CONSUMER BEHAVIOR

Average size of purchase in traditional shopping still is larger than in the internet shopping;

For information search about products the main source is friends and the internet. But we can expect changes towards the internet as a main source in the nearest future;

There is no special time or day for more active purchasing, but often it is done in afternoon;

Shopping habits are changing but not very fast.

Conclusions

According to the research results the authors conclude that:

- It is obvious that consumer and buying behaviour is changing under the impact of information and telecommunication technologies.

- At present, due to decrease of financial inflow, there is a rapid decline of private consumption and investment, therefore consumers would like to buy cheaper. For information search about products and prices the main source is the internet. Consumers switch from traditional market to the internet.

- Average size of purchase in traditional shopping still is larger than in the internet shopping, but in the next 10 till 15 years we can expect changes in buying habits of Latvians.

- The path of decision making from the problem to results under the influence of IT has become shorter in terms of time.

- There are at least 5 different generations described in theory and possible to observe also in praxis.

- The international experience in analysis of generations can be applied to Latvia and the Baltic States. For each generation it is possible to allocate different motives, demand and behaving in the market.

- In spite of age of Latvians, number of internet users increasing simultaneously with developing computer, and internet literacy of “the Baby Boomers” generation is developing.

- Time span of decision making is closely related to the involvement level and the higher the involvement level the more time is to be spent on decision making and thus along with the IT development we arrive at the possibility to reduce the time spent in many activities and very often also save the financial resources.

- In consumer behaviour the electronic environment is mostly driven by the lack of time and additional conveniences and the changes in decision making process generally are connected with time span. But there is some exclusion which is connected with the extended decision making process when the customers are comparing prices and goods in the electronic environment, but for purchasing they have to ensure themselves about the quality of the product in the traditional shops.

- The path of decision making from the problem to results under the influence of IT has become shorter in terms of time, nevertheless some new problems have arisen – the lack of social contact, safety measures in e-commerce, logistics etc.

- IT changes the decision making process and depending on the field of the purchase decision making and its direction, in general the path from the problem to the result is shorter; if it is longer then consumer is more satisfied with the quality and price relations – the longer the path, the more satisfied the consumer in terms of the result.

However, the field of research is very wide and this study presents just an insight into the large scope of different questions, which have to be tackled in the consumer behaviour research and particularly for generations.

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CHECKLIST FOR USABILITY EVALUATION AND DESIGN OF SUSTAINABLE eCommerce SERVICES

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Abstract

A checklist for usability evaluation of eCommerce services (ECS) is developed. It is integrating eCommerce quality and usability. The checklist can be used for usability evaluation and design of eCommerce services based on data collected from customers while performing tasks, for instance, searching for products, registering with website and buying merchandise. They support the allocation of usability problems and the defining of relevant redesign measures. Significant sustainable improvement of the usability of eCommerce services is expected after implementation of redesign recommendations. The advantages of the checklist are: (1) measuring of both usability and quality of eCommerce services, (2) supporting allocation of usability problems and (3) defining of eCommerce services redesign recommendations.

Key words: eCommerce, usability, quality, web services, evaluation, design, checklist

Introduction

Sustainability assumes that human well-being is better served if the value of all combined assets is preserved, rather than giving special attention to maintaining natural capital, since technology may be able to substitute for lost ecological services [25]. Since the early 1990s there has been interest in exploring the essence of sustainability of competitive advantage for information technology and eServices, [1, 7, 9, 11, 13, 14, 24], although this domain of study is not well developed. From an eService system perspective, sustainability can be defined as an organization’s ability to continually deliver explicit business value from eService systems investments. It is this ability that is enduring rather than any outcome, for example, a new system that provides advantage, which is likely to be short lived. [2] notes that eService systems capability “is not so much a specific set of sophisticated technological functionalities as it is an enterprise-wide capability to leverage technology to differentiate from competition” (cf. Fig. 1.). Surviving and newly formed companies are re-evaluating their strategies and struggling to build a sustainable business model [23]. A shift from economic (shareholder wealth) maximizing behavior to sustainable development (decisions taking into account the economic, social and environmental consequences of alternatives) in business is required [19]. Three recent methods of business modeling aimed to create sustainable eHealth services are proposed [31]. With the advent of eCommerce, the use of technology is becoming just an accepted, often expected, way of conducting business transactions—what has been referred to as the ‘strategic necessity hypothesis’ [7, 12, 28]. Consequently, commercial organizations are increasingly looking towards the innovative application of technology to provide them with a source of competitive advantage [26].

This has led to both a constantly increasing number of modern web sites and an increase in their functionality, which in turn makes them more complicated to use [22, 29]. Since eCommerce services (ECS) surpass the traditional offline methods, usability of the eCommerce websites is vital to facilitate customers in finding needed product information effectively and efficiently. The usability criteria such as navigation that include hyperlinks, length of page, search engine and user location indication is usually assessed. Under page layout criteria, usage of colors and images, consistency and attractiveness can be evaluated. [4] showed
that the ease of navigation to product information on a company’s website was related to positive general impressions of the organization under investigation. Similarly, [8] demonstrated that favorable usability perceptions were associated with participants’ increased inclinations to find and recommend a product to their friends. [27] investigated the effects of system speed and website user-friendliness on customer evaluations of company image after these customers (who were in sales positions) completed buying products from these companies. Results revealed that both usability variables were positively correlated with customer-to-company image evaluations. Additional research investigating the effects of website usability on organizational attractiveness, website attitudes or evaluations [6], and satisfaction with website use have been similarly supportive. The usability of eCommerce sites (as perceived by customers) affects whether or not the site effectively facilitates the desired services [29]. It is important for online services such as these to analyze applicants’ perceptions, and consequently design services in a way so as to meet their needs.

Usability of the eCommerce websites is an important feature that needs to be taken into account to ensure the effectiveness of the buying process. This implies that users of online eCommerce sites should be able to navigate around the site and find relevant information quickly and easily. Directions on how to create or edit profiles, search through product lists and submit desired products should be presented logically and in clear language. In addition, forms available online should be presented in a consistent, logical and comprehensible format thus making it easier to collect information from customers in a systematic way. The more competent services from eCommerce websites provide flexibility to users to purchase their products with a single click and provide additional after sale services, for example, order tracking.

eCommerce services enable customization of the company’s website, which is often the first contact point between potential buyers and the company. So while designing the website’s pages, it is important to acknowledge the importance of its usability for customers. Customers should be able to buy products easily and track their progress through the checkout process through a user-friendly interface. Website design features investigated have primarily included usability (i.e., ease of navigation of the website), the attractiveness of eCommerce websites in terms of their colors, fonts, pictures, and bulleted versus paragraphs of text [4, 8].

Time and mental workload required to complete searching and buying tasks with Internet-based service providers can significantly impact overall service quality evaluations. Thus, they should be monitored and benchmarked when possible, as poor service quality perceptions can ultimately impact customers’ willingness to buy products. If websites are able to determine the underlying dimensions of service quality that are relevant to eCommerce services, they may be better able to design their websites to provide customers with the highest service quality possible. In addition, if they have a tool for measuring a customer’s perception of their service quality, they may be able to adjust their service to retain current potential customers and attract new customers to use their site [3].

From these findings can be concluded that usability and quality factors are positively related to helping the sustainability of online eCommerce firms and their services offerings. Measurement of these factors by a checklist can contribute to better customer relations by enhancing their user experience with better services and hence contributing to increased profitability and resulting long term sustainability. In the following a checklist for usability evaluation and design of eCommerce services will be presented.

1. Checklist Design

The objectives of the checklist are to support the creation of a world-class and credible website that will attract customers. The website will provide an enhanced experience for customers and so will draw many visitors, leading to increased business. It will simplify and speed up the eCommerce process (necessary to cope with the expected large increase in customers). The website will increase the company’s credibility within the online retailing industry. This will have a significant impact on the profitability of the business. An increased presence in global markets, improved marketing, as well increased sales and net profit are expected.

The checklist aims at developing innovative design for eCommerce services allowing online companies to effectively set up and maintain
web sites which can better address customer needs. Using the checklist can be developed a method for evaluating eCommerce services usability, based on modern computational intelligence techniques, which allows the discovery of usage problems of customers resulting in an improvement of its design. Based on this method the eCommerce website can be redesigned.

The empirical basis for usability testing is based on a validated understanding of the „customer performance in context“. Studies show that checklist data can be both reliable and valid for the assessment of customer satisfaction with websites or computer-based applications [20] (cf. Fig. 2.).

There are both unique and overlapping dimensions in the fields of eCommerce service quality and eCommerce usability. From extant literature most comprehensive are the following:

- eCommerce usability dimensions and items [5, 30];
- eCommerce service quality dimensions and items [16, 22].

The resulting dimensions and items extracted here will be persistent, because even though the underlying technology can change, the base evaluation criterion will be the same. For example, „ease of finding products“ may be dependent on tab structuring, layering of information and number of clicks. These may change with advances in technology, but the criterion „ease of finding products“ will remain the same. The result was extracted eCommerce usability and service quality dimensions (cf. Fig. 3.).

For usability study participants have to complete tasks using the eCommerce website and to answer the checklist questions. The checklist was constructed based on five-point Likert rating scale [21]. Users are asked to rate agreement with the statements, ranging from strongly disagree to strongly agree (cf. Fig. 4.).

2. Usability Evaluation

The usability of eCommerce services can be evaluated and designed by a checklist. Usability evaluation aims at weaknesses of an eCommerce service and gives hints for improving its usability. Most usability evaluations gather both objective and subjective quantitative data in the context of realistic scenarios-of-use. Objective data are measures of participants’ performance. Subjective data are measures of participants’ opinions or attitudes concerning their perception of usability. Subjective measures assess impression of the customers towards the design of the website as well as the effect of the website design towards customer interaction.
Overall, usability measures the quality of a customer’s experience when interacting with an eCommerce system as „the extent to which a system can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use” [17].

The usability dimension effectiveness measures usability from the point of view of the output of the interaction, for example, quality of output or quantity of output in relation to a target [17]. For example, with a quantitative answer to the following question, an evaluation of this usability dimension is possible:

1. Are users able to select the correct path to find products?

The usability dimension efficiency measures relating to the customer’s effectiveness of interaction to resources expended, for example, time taken to perform tasks [17]. Quantitative answers to the following questions give a measure of this dimension:

1. Are users able to accomplish the purchasing of products quickly?
2. How does the number of pages viewed compare to the number of pages required to find the desired products?

The usability dimension satisfaction measures the comfort or level of enjoyment of the customer, while interacting with the website [17]. Subjective answers to the following questions indicate user’s opinion of a website:

1. Do users enjoy shopping on the website?
2. Are users frustrated or confused when shopping on the site?

On the Internet, rapid technological change is stressful for many customers and often developers focus on the newest advancements rather than on what is most useful and important from the customer perspective. Customers are
often not part of the website development process which creates difficulties for them to understand some of the website resources, when the site is made available online. According to International Organization for Standardization (ISO), „Human-centered design is characterized by: the active involvement of users and a clear understanding of user and task requirements; an appropriate allocation of function between users and technology; the iteration of design solutions; multi-disciplinary design“ [18].

Conclusions
For measuring the most important dimensions of usability for users of eCommerce services, a checklist is created, which integrates dimensions and related items from eCommerce usability and eCommerce service quality. After usability testing is done, evaluation results will be used to obtain the most important usability problems and relevant eCommerce services usability design improvements. Such an approach can enhance product strategies, product services and create roadmaps to identify potential eCommerce services usability issues that would result in reaching better customer satisfaction and increased company profits.

References
SHARE OF FOREST AND TIMBER INDUSTRY IN THE ESTONIAN ECONOMY

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Abstract

Forest is one of the most important renewable sources of energy, covering approximately one half of Estonia’s area on mainland. Estonia ranks the fourth among the other European Union Member States with the relative share of forest land. Forest represents an important source of employment while timber industry forms an important branch of the Estonian economy. Considerable decline of added value of GDP has become notable in forest industry over the recent years, however, the added value per employed person is approximately 30% higher than the respective total of other sectors. Timber sector contributes approximately one fourth of the turnover of Estonian economy annually and, respectively, one fifth of export and one third of investments. Rapid development of timber industry stopped shortly before the onset of the economic recession. Declining demand for wooden construction details, attributable to weak property market, hit this sector first. The last couple of years have been relatively complicated for the timber industry sector. Several large saw mills, for example, have wound up their activities. The biggest decline (32%) took place in the production of building materials; this can be linked, directly, to declining construction market. High energy prices and declining demand for paper wood, attributable to the recession, has also affected the structure of timber industry. The quantity of domestic resources, however, facilitates the development of timber industry by making the sector less dependent on imported raw material.

Key words: Timber industry, forest industry, regional employment, decline of demand

Introduction

The total area and reserve of forest land in Estonia in the past half a century has considerably increased and is one of the greatest riches of Estonia both in the sense of nature and economy. The Estonian forest resource is mainly used in the industry processing timber. Forest industry is a branch of industry that is engaged in the felling of forest, transport of trees from the forest and the initial processing of timber. The main production is logs, paperwood and firewood. Timber industry is a branch of the processing industry, engaged in the mechanical, chemical and thermal processing of timber. The raw material for the timber industry is sawn timber. Compared to other branches of the processing industry, timber processing is the second main branch after the production of foodstuffs in the GDP structure. The purpose of the article is to show the impact of forest resource on the Estonian economy and the use thereof in the forest and timber industry. The author has set the following tasks to achieve the purpose of the article:

− characterise the forest policy of Estonia
− study the current status of Estonian timber companies
− determine the opportunities for the export and import of timber products
− show the need for forestry companies

In Estonia, greatly competitive and modern mechanic timber processing has been developed.

Regionally, timber industry has developed all over Estonia. In the export of timber industry, the export of unprocessed sawn timber has been replaced with products of higher added value. The proportion of processed timber, construction details and log houses has increased.

The Estonian timber industry can find ways to market its production in the current conditions of economic crisis as well. All sub-branches of timber industry have made large investments into production; the greatest proportion of these has been contributed by sawmill industries. The latter have mainly invested in post-processing. This is a positive trend for the Estonian economy as the development of post-processing allows appreciating the local forest resource of Estonia more and also thereby increase the cost of export. At that, timber industry is one of the few branches of industry in which the balance of export and import is positive.

The greatest income is created with the diverse and skilful use of the forest resource, keeping further development perspectives in mind. It is important to develop the joint action of forest owners, which would help lower the expenses related to silviculture. Estonian forests are often full of underwood and not taken
care of and in such forests, it is very expensive to work with technology. It is wise for forest owners to cooperate as it helps to lower the expenses related to silviculture and involve grants, and larger and more compact offers lower the cost of the harvesting of forest. Unlike in Sweden and Norway, in Estonia, the use of timber on the state level is not paid sufficient attention to, although more than 50 per cent of Estonia is covered with forests. Also, local governments should provide more support to the activity of forest owners and to joint managing. Timber industry could have a significant role in supplying the country with energy as timber is a renewable source of energy.

The forest policy of Estonia

At the implementation of the goals of the Estonian forest policy, the state and all persons directly or indirectly engaged in the forest sector play a role. The role of the state lies in the establishment of a legal regulation in the fields related to forestry. In order to rationally use forest resources, a forest management plan is prepared for all forestry properties. For the utilisation of the areas left out of agricultural production, afforestation programmes are prepared. Afforestation is only conducted on the areas where other land use gives fewer benefits to the society.

In the pre-war Republic of Estonia, state forests were managed and the management of the few private forests regulated by one and the same authority. Basically the same system was valid during the Soviet reign as well, when the forests of state forest enterprises (conditionally, these can be referred to as state forests) were managed and the management of collective farm and state farm forests (conditionally, these can be referred to as private forests) supervised by the same central authority. Although the central forestry authority in Estonia has had several names throughout times and been a part of various ministries or governmental institutions equal to these, the management of state forests, forest policy and the elaboration of the legislation related to forest, supervision over what is going on in all forests, etc., still remained in the competence of one and the same central forestry authority. After the regaining of independence in Estonia, it was regarded necessary to separate the functions of the state as a forest owner and the state as a body of power and supervision. With this, unhealthy competition between state and private forestry was attempted to be avoided, which could have been created by enforcing favourable regulations for state forestry and granting a right to supervise these regulations to the managers of the state forest themselves. The later development of forestry has shown that these fears were groundless: on the timber market, demand exceeds supply and there is no competition between sellers of timber; however, state forestry as a large organisation and seller of large quantities of timber still preserves its economic advantages [1]. However, the enforcement of regulations favouring the state forest and harassing private forestry is not possible any more as unlike during the Soviet era, the restrictions and limitations for forest owners cannot be enforced by the central forestry authority any more, but this can be only done at the level of the laws of the Riigikogu.

The state forest policy must ensure that the forest use of private forest owners is in compliance with the general goals of the state forest policy. The state supports private forestry via the organisations of forest owners. At the assignation of support, the efficiency of the operation of the organisations is mainly considered [2]. The large amount of bureaucracy accompanying forest management is not in balance with the profit gained. This has significantly decreased the interest of forest owners towards managing (and maintaining) their forest, which in turn negatively affects the condition of the Estonian forests. The volume of the use of forests makes up only a little more than 50% of the annual growth of forest reserve in private forests [3].

The state supports forest management mainly via forest management planning and consultation. The state guarantees the quality of counselling and conducts a training for consultants in the initial stage. The volume of the support to private forestry is determined by law. In Estonia, the forest owners who are registered as self-employed people get a 45000 kroon exemption from income tax. But this only means 5% of the owners [4].

The tasks of the state in forestry are as follows:

- the guiding of forestry and the elaboration of a forestry development plan and legislation regulating forestry therefor;
ensuring of the good state of the forest;
keeping of account of forest resources;
support to private forestry;
governance and management of the state forest;
organisation of state supervision;
ensuring of the protection of the diversity of forest life [Ibid.]

The services that support the long-term goals of forestry are provided to the private forest owners by the state for free. This means the preparation of the forest management plans funded by the state for the lands returned / to be returned and privatised / to be privatised in the course of the land reform, and the counselling on the use thereof. At the request of the forest owner, the forest management plan can be ordered according to an expedited procedure at the expense of the owner as well. The preparation of forest management plans is funded and coordinated by the state. Special attention is paid to the provision of services related to the marketing of timber and relevant counselling. In order to improve the tax system, additional surveys and analyses are conducted. Tax policy is elaborated according to the principles that facilitate the formation of private forests. The supervision over the compliance with laws is mainly focused on the restoration of the forest and adherence to the environment protection requirements [2].

The principles for supporting private forestry are determined in the Estonian Forestry Development Plan until the year 2010. The main activities funded by the Private Forest Centre are as follows:

− the supporting of private forestry mainly by way of counselling and forest management planning (planning of forests and free preparation of forest management plans, and an opportunity has been provided for preparing forest management plans according to an expedited procedure at the expense of the forest owner);
− the elaboration of the structure of the counselling service on the grounds of competition; special attention is paid on the marketing of timber during counselling. Counselling may also be for pay, ordered and paid by the owner;
− the development of the tax policy on the principles that favour the formation of private forests;
− with regard to the supervision of private forests, focussing on the restoration of forest and adherence to environment protection requirements. For some reason, attention has not been paid on the fulfilment of cutting requirements, which is a problem that is at least as acute as failure to reforest [2].

There are serious problems in the activities related to private forestry. The main problems are as follows:

− difficulties at the organisation of private forests, which arise from the lack of funds allocated by the state for this purpose. All forest owners cannot afford forest survey and management planning and preparation of forest management plans at their own expense;
− unfair tax system that involves a high land tax and failure to consider the specifics of forestry at taxation. The issues of taxation are very specific and must be settled by lawyers;
− difficulties in the marketing of timber and sale of cutting right, which arise due to the small amount of the timber sold and the forestry related and legal incompetence of the sellers, also due to the abundance of dishonest buyers-up.
− the little information provided to private forest owners about the opportunities for receiving grants, indemnities and compensations;
− the abundance and sometimes over-abundance of nature conservation restrictions, the unexpected enforcement of restrictions in the forests that have so far been in the category of profit-seeking forests [2].

The development of the forest and timber industry is directed by open market economy and free competition. The forest policy of the state is aimed at the establishment of an environment suitable for the development of the private sector with the aim of supporting the economic strengthening of the state as a whole, contributing to regional development and limiting the appearance of monopolies.
Status of the companies of the forest sector

The Estonian forest resource is mainly used in the forest and timber industry. But the use of timber and timber residues as sources of energy keeps increasing year by year. Compared to other branches of the processing industry, timber processing is the second main branch after the production of foodstuffs in the gross domestic product. After the recession at the beginning of the 1990s, the forest industry has been increasing successfully and constantly: privatisation has been successfully completed, the rate of investments in the sector is high, production level has increased and the proportion of export in production is remarkable. In 2001, timber industry provided 1/7 of the total amount of processing industry. Forest products made up more than 22% of the Estonian export value. Timber and timber products (incl. wooden furniture and prefabricated timber constructions) are some of the main export articles of Estonia. The constant growth of the forest sector has helped the entire economy to a new rise during the periods of economic recession and significantly balanced the general negative foreign trade balance. The proportion of forestry and timber industry companies in the GDP has constantly been increasing. If in 1993, the proportion of forestry and forest collection companies in the GDP in current prices was 1,3%, then in 2000, already 2,5%. The total proportion of timber, paper and furniture industry in 1993 was 2,1% and 4,1% in 2000. [5] The proportion of the companies of the forest sector in the GDP in the years 2000-2007 is shown on Figure 1. The average number of employees in the forest and timber industry in the year 2010 is presumably more than 20200. In 2004, the forest sector formed 6,1% of the GDP. For the year 2010, the GDP of the forest sector is estimated to be seven billion kroons. The proportion of the timber, paper and furniture industry companies in the added value of the processing industry has also increased: from 10,8% in 1993 to 22,4% in 2000. The import of timber and timber products has been increasing year by year, but the proportion thereof in total import is small (2%). The main import articles are wooden furniture, plywood, etc. [6].

Timber industry is one of the largest branches of industry in Estonia. According to various databases, about 1000 companies with more than 15000 people are engaged in timber processing and the production of timber products. The people employed at forest and timber industry make up almost five per cent of the total employment rate of the country. In the period 2001-2006, the volume of production in the branch of industry increased by more than one and a half times, the proportion of export in sale made up 75%. However, the current situation in the sawmill industry has significantly changed. As of summer 2007, the situation of the timber industry has remarkably deteriorated.

![Figure 1. The proportion of forest sector companies in the gross domestic product (according to current prices) in the years 2000-2007](image-url)
The greatest matter is the fact that as of May 2007, the import of timber from Russia due to the blocking of the railway is seriously impeded. In addition, Russia has imposed export duties on roundwood, which at the moment for softwood log is 10 euros, but by the year 2009, increased to 50 euros, i.e., the import of logs from Russia almost stopped. The import of timber is also hindered due to the ever increasing prices.

The extremely large price increase of raw material on world markets is also becoming a trend, as well as the decrease in demand – at the moment, many companies who had been successful so far are hit by an extremely large drop in turnover, which has been caused by a significant price increase of raw material and a considerable decrease in demand due to this.

If a couple of years ago, timber industry was a significant balancer of the foreign trade balance (the domestic demand in Estonia as well as on foreign markets was great), then by now, the situation has completely changed. At the moment, the situation is vice versa – in order to satisfy domestic needs, many companies are forced to import a significant part of the timber.

According to the Estonian Commercial Register, in the year 2007, there were 327 companies in Estonia whose main field of business was the sawing, planing and impregnation of timber. According to the information catalogue 1188, there are 142 sawmills in Estonia. Sawmills are competing with each other by products and also by locations. Smaller sawmills are competing with larger ones mainly on the basis of price and quality. Small sawmills are turning into ever more skilful niche operators and there is also a trend to merge.

Export and import of timber products

In the developments in the last decade, the large increase of export in sales must be stressed; it has been especially noticeable with regard to paper and paper products. The main export articles are timber, wooden furniture, unprocessed timber, wooden construction details and prefabricated timber constructions. Production and export-import of the Estonian timber are shown in Table 1.

<table>
<thead>
<tr>
<th>Table 1. Production and export-import of the Estonian timber, thousand cbm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>------------------------</td>
</tr>
<tr>
<td>Timber production</td>
</tr>
<tr>
<td>Export</td>
</tr>
<tr>
<td>Proportion of export</td>
</tr>
<tr>
<td>in production, %</td>
</tr>
<tr>
<td>Import</td>
</tr>
<tr>
<td>Source: Statistics Estonia</td>
</tr>
</tbody>
</table>

Next to timber, wooden furniture is on the second place in the export of the production of timber industry in Estonia. According to the Statistics Estonia, wooden furniture and parts thereof were imported the most to the most important furniture market of the European Union – Germany (30%), with the average price of 27970 kroons a ton. 17% of the wooden furniture was exported to Finland for the price of 31848 kroons a ton. The average price of the wooden furniture exported to Denmark was 24249 kroons a ton (13% of production) [1]. The average price of the entire product group was 28123 kroons; to Finland, wooden furniture was sold for a price that was higher than the average. However, the making of conclusions and comparisons on the basis of the average prices calculated by the authors and given here regarding the quality of the production exported must be taken with some reservations – the average price only summarises the prices of all kinds of furniture exported to a specific country. The main target markets for the production of the timber sector are Finland, Sweden, Germany, Great Britain and Denmark. The very fast growth of the export of the timber sector is shown in Table 2. This table also clearly shows the trend to export goods with a higher added value. The proportion of timber, paper and furniture industry companies in the added value of the processing industry has also increased: from 10,8% in 1993 to 22,4% in 2000. The import of timber and timber products has been increasing year by year, but the proportion thereof in total import is small (2%). The main import articles are wooden furniture, plywood, etc. [1]
Round log is gradually being replaced by processed ligneous materials. In 2001, timber industry reached a sales volume of 7,22 billion kroons, exceeding the level of the year before by as much as 16,8%. In export, the growth was smaller that year – 5,1%. The growth in the sale of products has been stably noted in paper and furniture production as well, increasing by 15,1% in 2001 and by 25% compared to the year before (export growth 10,3 and 28,9%).

In timber processing, the companies with foreign capital are significantly more aimed at export than domestic producers – the proportion of export in turnover in 2001 for companies based on domestic capital was 49% and for producers with foreign capital 79%. According to the database of Statistics Estonia, it can be concluded that producers with foreign capital are larger and more profitable than the companies based on domestic capita that are engaged in timber processing and production. Although in 2001, there were only 26% of companies with foreign capital in the companies of the timber processing industry, their turnover made up already 37%, in export as much as 49%, in added value and assets 38% and in the number of employees 37%, in total profit as much as 56%. [7]

In the years 2006-2008, there were about 19,2 thousand people engaged in the timber sector. By the year 2016, the rate is expected to decrease by 0,7 thousand. Although in 2008, employment rate in the sector only amounted to 15,9 thousand, it should start increasing when the crisis recedes and the Estonian timber resource is processed domestically in a larger volume. However, the increase of volumes will not bring about a sudden increase in employment rate because more products with added value must be created to stay in competition. Thus, the increase in the need for specialists can be expected. The relevant structural changes increase the need for people with secondary and tertiary level education [8].

### Table 2. Export of wood and articles of wood 2008

<table>
<thead>
<tr>
<th>Product Description</th>
<th>Million kroons</th>
<th>Proportion %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wooden furniture and parts thereof</td>
<td>2962,9</td>
<td>17,3</td>
</tr>
<tr>
<td>Timber details, construction details, joiner products, doors, windows</td>
<td>2556,9</td>
<td>14,9</td>
</tr>
<tr>
<td>Sawn timber</td>
<td>2089,9</td>
<td>12,2</td>
</tr>
<tr>
<td>Prefabricated timber constructions</td>
<td>1966,4</td>
<td>11,5</td>
</tr>
<tr>
<td>Unprocessed roundwood</td>
<td>1461,2</td>
<td>8,5</td>
</tr>
<tr>
<td>Firewood, sawdust, granules and wood waste</td>
<td>1118,9</td>
<td>6,5</td>
</tr>
<tr>
<td>Mechanical pulp</td>
<td>1034,2</td>
<td>6,0</td>
</tr>
<tr>
<td>Converted sawn timber</td>
<td>763,3</td>
<td>4,5</td>
</tr>
<tr>
<td>Particle boards</td>
<td>607,2</td>
<td>3,5</td>
</tr>
<tr>
<td>Paper</td>
<td>573,9</td>
<td>3,3</td>
</tr>
<tr>
<td>Wooden containers, wooden pallets and other pallets</td>
<td>526,4</td>
<td>3,1</td>
</tr>
<tr>
<td>Other wooden products</td>
<td>386,7</td>
<td>2,3</td>
</tr>
<tr>
<td>Plywood, veneered wooden panels</td>
<td>367,4</td>
<td>2,1</td>
</tr>
<tr>
<td>Veneer and veneer sheets</td>
<td>316,7</td>
<td>1,8</td>
</tr>
<tr>
<td>Fibreboards</td>
<td>174,8</td>
<td>1,0</td>
</tr>
<tr>
<td>Hoopwood, poles, pegs, columns</td>
<td>92,7</td>
<td>0,5</td>
</tr>
<tr>
<td>Wooden frames for paintings, photos, mirrors, etc.</td>
<td>64,3</td>
<td>0,4</td>
</tr>
<tr>
<td>Charcoal</td>
<td>41,0</td>
<td>0,2</td>
</tr>
<tr>
<td>Wooden tools, wooden details thereof</td>
<td>16,3</td>
<td>0,1</td>
</tr>
<tr>
<td>Densified wood as blocks, beams</td>
<td>16,0</td>
<td>0,1</td>
</tr>
<tr>
<td>Wood wool, wood flour</td>
<td>1,5</td>
<td>0</td>
</tr>
<tr>
<td>Wooden sleepers</td>
<td>1,5</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>17140,0</strong></td>
<td></td>
</tr>
</tbody>
</table>

*Source: Statistics Estonia*

### Activity of forestry companies

Estonia is interested in having sustainable forestry. Forest should be managed in such a manner and extent that ensures its biological diversity, productivity, ability to renew itself, vitality and potential now and allows performing ecological, economical and social functions without damaging other ecosystems in the
future as well. In Estonia, the umbrella organisation joining private forest owners is the Estonian Private Forest Union, which joins about 5% of private forest owners according to various estimates. In Estonia, there are about 50 forest owner organisations here, which among other things are aimed at sharing knowledge and experience with the aim of the sustainable management of forests. Forestry companies also help organise the cuttings in the forests and organise reforestation works. In Estonia, 12 million cubic metres of forest could be cut annually, but in reality, half less is cut. The rule that the private owner is the best and most efficient manager is not always valid. Americans have identified that their forestry companies do this job better than private owners [3].

Of the nearly 50000 private forest owners of Estonia, about 2000 have joined forestry companies, which is less than 5 per cent of the total number of forest owners. However, the area of the private forest land owned by the forest owners who have assembled into companies is estimated to be about 100000 ha or almost 10 per cent of the total area of private forest land (according to the yearbook Forest 2006, the area of the private forest land registered in the land registry is a bit less than 880000 ha) [6].

Via the companies joining private forest owners, forest owners can get information about support and amendments to laws. The companies also organise study days. The societies of forest owners have been established on the basis of groups of friends, but also village communities, but there are larger ones too, involving counties. In larger societies, forest management related works are planned together, which gives forest owners an opportunity to considerably save on their expenses. Cooperation projects between different forest societies help find diverse ways for using timber, jointly increasing sales volumes and finding better sales channels and buyers who offer a higher price [9].

In the current economic crisis, it is reasonable to cut down on the indirect expenses related to the business of the societies and increase the expenses related to the expansion of joint activity. The state has limited funds and it may be decided at any time that private forest owners are the ones who should not hope for any support anymore. Close cooperation between forest societies contributes to more successful management.

Thus, via joint economic activity, it is possible to:

- via successful business activity, increase independent funding of the society
- via the provision of services, manage the assets of the society more efficiently
- offer stable sale of timber to forest owners and supply to companies
- get the highest price on the market for timber for the members of the society
- establish international relations, which in turn will create more possibilities for supply

In order to make the support system of private forest owners stronger and more independent, the Ministry of the Environment has partially changed the principles for the evaluation of the grants given to private forest owners as well. At the revision of applications for grants, evaluation criteria are proceeded from, which are applied at reforestation, investment into the forests of private owners and the preparation of forest management plans, support to forest society and the money stock grant of forest society. This in case it appears that with regard to said types of support, the amount of the funding of all applications complying with the requirements has exceeded the budget for the type of support.

At the ranking of applications, the application that received the highest total evaluation is deemed to be the best. In case of applications with equal figures, the application submitted by a forestry company or the application in which the amount applied for is smaller is preferred. Mainly, the works are supported which, if made by more than one forest owner at a time, allow to save on expenses or work more efficiently. With such evaluation criteria, the state wishes to contribute to the development of the joint activity of forest owners. Cooperation with other private forest owners provides a chance to get to know the values of one’s forest better and the use of economic cooperation allows earning a better income on the management of one’s forest.

Conclusion

The forest is one of the largest riches of Estonia both naturally and economically. The
purposeful and economical use of the forest is one of the most important opportunities for ensuring the development of the society.

The aim of the strategy of supporting forest and timber industry is to increase the stability of the timber market and ensure the operation of market mechanisms in the manner that facilitates investments into the development of environment-friendly processing of timber. To use timber efficiently, the complex and purposeful use thereof is ensured, timber processing in the republic developed and timber exported for the highest value possible. Of timber products, sawn timber is the product exported to foreign markets the most with regard to monetary value. If in earlier years, the main export article was unprocessed timber, then in recent years, the importance of sawn timber has increased. The products of the Estonian timber industry are a high quality and competitive export article and a significant material for fulfilling the needs of the domestic market.

Timber industry can operate during the current economic recession as well and find ways to market its production. But the prices of timber have significantly dropped and the interest of forest owners towards selling timber is low. Timber industry plays a significant role in supplying the country with energy. The state and local governments should aim at directing energy use towards renewable energy. It is wise for forest owners to cooperate as it helps to lower the expenses related to silviculture and involve grants, and larger and more compact offers lower the cost of the harvesting of forest. From the regional employment rate perspective, the industry based on forest has a significant role as an employer as well.

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THE ASSORTMENT AND PRODUCTION TECHNOLOGY PROGRESS IN WOOD PROCESSING IN POLAND

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Warsaw University of Life Sciences, Poland

Abstract

Changes in product structure and production technology are one of the most important factors responsible for the company existence on the market. Especially during the collapse of world trade and the higher demands of customers for a product the enterprises should still improve the technological process to meet the growing competitiveness. For this reason, not only the wood industry companies should carry the appropriate investments on innovation.

Key words: innovation, production technology progress, wood industry

Introduction

Technical progress is expressed by changes in the design and production technology and the main goals of these changes are the profitable economic effects. The economic effects are achieved by an increase of the sold production as a result of improvements. The increase of the sold production usually leads to industry share market increase.

The most important result of technological progress is to improve the production profitability by higher prices and selling more modern and high-quality products, which can effectively compete in the European Union market.

The Progress in the implementation of new products and technologies in Poland

Basic measure of the implementation of new products to production and trade is the rate of production recovery. It is the ratio of the value of sold new products to the value of total sold production.

Values of this index against the total industry in Poland are not favorable. In 2007 the value for total industry reached 23%, in the wood industry much less, because only 7%, and in particular wood industries, namely: in the furniture industry 11%, and only 6% in the sawmill industry. Only the level of the rate of production recovery of the pulp and paper industry reached a similar level to innovation at industry in general, namely approximately 23%.

Detailed data of the new products are shown in table 1 and figure 1.

Table 1. The share of sold new products in the 2002-2007 in the medium and large enterprises in Poland

<table>
<thead>
<tr>
<th>Industry</th>
<th>The share of sold new products (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2002</td>
</tr>
<tr>
<td>Total</td>
<td>16,7</td>
</tr>
<tr>
<td>Wood and wood products production</td>
<td>7,2</td>
</tr>
<tr>
<td>Furniture production</td>
<td>12,6</td>
</tr>
<tr>
<td>Pulp and paper production</td>
<td>4,0</td>
</tr>
</tbody>
</table>

Source: Author’s own calculations based on Główny Urzad Statystyczny data (Central Statistical Office)

The data analysis allow to determine that the wood industry recovery production rates look far worse in the background of the total industry production; only the recovery production rates for pulp and paper industry notes significant progress in improving of the production assortment structure.

This condition can be explained by the nature of the wood industry, where there are no such large needs and possibilities of meaningful verification of production assortment structure, as in the electronics or clothing industry. In the pulp and paper industry, there is a clear necessity to implement new products in the field of paper and cellulose processing, because of rapidly growing printing industry and newer paper products being introduced on the demanding European Union market.
The capital expenditures for technological progress in Wood industry enterprises at the background of the total industry

Technological progress is usually associated with the necessity to invest more in the innovation field. The key measure here is the ratio of expenditures to the value of revenue from the sale of goods and services. Interesting changes of this indicator in 2002-2007, are shown in the Table 2.

**Table 2. The ratios of expenditure for innovation in relation to sales revenue**

<table>
<thead>
<tr>
<th>Industry</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min PLN</td>
<td>%</td>
<td>Min PLN</td>
<td>%</td>
</tr>
<tr>
<td>Total</td>
<td>13848.1</td>
<td>-</td>
<td>15890.2</td>
<td>-</td>
</tr>
<tr>
<td>Wood and wood products production</td>
<td>233,4</td>
<td>1.7</td>
<td>220,8</td>
<td>1.4</td>
</tr>
<tr>
<td>Furniture production</td>
<td>251,3</td>
<td>1.8</td>
<td>337,9</td>
<td>2.1</td>
</tr>
<tr>
<td>Pulp and paper production</td>
<td>174,9</td>
<td>1.3</td>
<td>259,6</td>
<td>1.6</td>
</tr>
</tbody>
</table>

*Source: Author’s own calculations based on Główny Urzad Statystyczny data (Central Statistical Office)*

Data analysis shows a systematic increase in the ratio of expenditure for innovation, particularly strong in the furniture industry, which
forced by competition increases efforts to stay on the market or even increases share in it. Similar situation is observed in the entire industry of wood and wood products production, where values of this indicator systematically increase. Lack of growth is observed only in the pulp and paper industry, where probably already the necessary modernization was made.

The Structure of expenditure for innovation

Table 3. shows the categories of expenditures on innovation in industry.

Table 3. The structure of expenditures on technical progress in the wood industry on the total industry background

<table>
<thead>
<tr>
<th>Industry</th>
<th>Categories of expenditure in innovation (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Research</td>
</tr>
<tr>
<td></td>
<td>9,3</td>
</tr>
<tr>
<td></td>
<td>9,6</td>
</tr>
<tr>
<td></td>
<td>5,5</td>
</tr>
<tr>
<td></td>
<td>0,3</td>
</tr>
<tr>
<td></td>
<td>2,6</td>
</tr>
</tbody>
</table>

Source: Author's own calculations based on Glowny Urzad Statystyczny data (Central Statistical Office)

Table 3. analysis shows the advantage of expenditure on machines and equipment in relation to buildings and structures, which can be easily explained. Most of the expenditures are associated with means of production, and construction of production halls made of lightweight materials, which does not significantly increase the costs of investment. Investment expenses for machinery and equipment are noted from 55 to 82,5% of total expenditure and these expenses are highest of all categories of investment costs. Second category of expenditures are buildings and structure costs, which reach 45,1%. Substantial expenditures are incurred on machines and equipment, as they are actively involved in the production process, buildings are less important. The lowest expenditures are observed in the field of research, training and marketing costs, which seems to be unfavorable for the further development of the wood industry.

Conclusion

Wood industry because of its assortment production nature, especially wood processing, fibre- and particleboard, plywood industry is less susceptible to competitors pressure, than clothing, automobile or electronics industries. More investment needs are in the field of production technology, which is the reason of necessity to invest in new systems and production equipment. These expenditures share is considerably higher, which can improve the competition position of Polish wood industry enterprises in the open market of the European Union. However, it appears that investment expenditures on research, training and marketing should be higher to effectively compete with the wood industry enterprises of the European Union.

Reference

ENERGY CHARACTERISTICS OF THE WOOD-CHIP PRODUCED FROM SALIX VIMINALIS

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Abstract

This article explores the energy characteristics of the wood-chip produced from Salix viminalis, which was cultivated at an energy plantation. The higher heating value of wood and bark of the Salix viminalis was assessed through an experimental measurement in a special calorimeter for solid fuels, model IKA C 200. Lower heating value of wood and bark were calculated from the higher heating value $Q_s$, as well as the hydrogen [H] and water content [W] in the fuel samples that were assessed in a laboratory. These analyses assessed the higher heating value and lower higher heating value of a dry Salix viminalis wood ($Q_s = 19753 \text{ kJ.kg}^{-1}$ and $Q_n = 18339 \text{ kJ.kg}^{-1}$). The higher heating value and lower heating value of a dry Salix viminalis bark was also assessed $Q_s = 19732 \text{kJ.kg}^{-1}$, and $Q_n = 18209 \text{ kJ.kg}^{-1}$. The share of bark in the wood-chip produced from Salix viminalis was assessed 23.86%, in accordance with the Slovak technical norm STN 48 0058 for assortments of wood, wood chips containing leaves, and sawdust. The lower heating value of wood chip produced from Salix viminalis in a dry state was calculated, based on the lower heating value of salix wood, the lower heating value of salix bark, and the share of bark in the wood chip as a weighted average. $Q_n = 18308 \text{ kJ.kg}^{-1}$.

Key words: higher heating value, lower heating value, salix, wood, bark, wood chips, energy plantations

Introduction

Wood, and wood residues from forestry and wood processing industry, can be used as a fuel. Wood fuel has an average higher heating value, a high share of siccative combustibles and a low content of ash. It is an important renewable energy source.

Numerous plantations of short rotation coppice were established in Central Europe in the last thirty years, mainly to increase production of biomass for production of energy. A minimum annual production of biomass from these plantations was 10 m$^3$.ha$^{-1}$. According to several studies [5, 11, 10, 13, 14] the most suitable short rotation coppice for energy production in the Central Europe are acacia (Robinia pseudoacacia L.), selected poplar clones (Populus), and salixes (Salix alba L., Salix viminalis).

This article presents some results of the experimental work undertaken to assess energy characteristics of wood chips produced from short rotation coppices of Salix alba L. that was cultivated at plantations for energy purposes. The energy characteristics assessed contain two values: the higher heating value, and the lower heating value.

Experimental research

Samples of wood and bark of Salix viminalis, to assess the energy characteristics were taken from a wood chip produced from four-year-old plantations, Fig. 1.
Elementary analyses of wood and bark samples of Salix viminalis, including the assessment of share of ash in wood and bark, were undertaken by team of experts from the Forestry Laboratory of the National Forest Centre in Zvolen, Slovakia.

The content of hydrogen in the analysed samples of wood and bark was assessed on a special analyzer, model NCS-FLASH EA 1112, produced by Thermo Finnigen.

The lower heating value of wood and bark samples in a dry state was calculated using the formula stated below. Inputs into the formula were: the measured higher heating values of the wood and bark samples, and a laboratory assessment of the contents of hydrogen and water of the same wood and bark samples.

\[ Q_n = Q_s - 24.54(W_r + 9.H_{daf}) \text{ (kJ.kg}^{-1}) \]  \hspace{1cm} (1)

where:
- \( Q_s \) – higher heating value of sampled in a dry state (kJ.kg\(^{-1}\));
- \( W_r \) – water content in the analysed sample, \( W_r = 0 \) (%);
- \( H_{daf} \) – share of hydrogen in the combustible sub-stance of analysed sample (%).

The share of bark on the wood chip produced from Salix viminalis was assessed by a laboratory technique at the Faculty of wood sciences and technology of the Technical University in Zvolen. The assessment was undertaken in accordance with the Slovak technical norm STN 48 0058:2004 on assortments of wood and wood chips containing leaves, and sawdust. The share of bark was assessed using the following formula:

\[ X_k = \frac{m_k}{m_s} \times 100 \text{ (%) } \hspace{1cm} (2) \]

where:
- \( m_k \) = weight of bark in a wood chip sample (g);
- \( m_s \) = weight of wood chip sample (g).

Based on the above specified energy characteristics of wood chip produced from Salix viminalis, an average energy value of the higher heating value of the wood chip in a dry state was calculated using the following formulas:

Higher heating value of a dry wood chip:

\[ Q_s = \left[ \frac{100 - X_k}{100} \right] Q_s \cdot d + \frac{X_k}{100} Q_s \cdot k \text{ (kJ.kg}^{-1}) \]  \hspace{1cm} (3)

Lower heating value of a dry wood chip:

\[ Q_n = \left[ \frac{100 - X_k}{100} \right] Q_n \cdot d + \frac{X_k}{100} Q_n \cdot k \text{ (kJ.kg}^{-1}) \]  \hspace{1cm} (4)

where:
- \( X_k \) – share of bark in the wood chip (%);
- \( Q_s \cdot d \) – higher heating value of wood (kJ.kg\(^{-1}\));
- \( Q_s \cdot k \) – higher heating value of bark (kJ.kg\(^{-1}\));
- \( Q_n \cdot d \) – lower heating value of wood (kJ.kg\(^{-1}\));
- \( Q_n \cdot k \) – lower value of bark (kJ.kg\(^{-1}\)).

Results and discussion

Elementary chemical analysis of samples of wood and bark of wood chip produced from Salix viminalis are shown in Table 1 below.

| Table 1. Shares of elementary combustible particulates and ash in wood biomass Durkovicova (2009) |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| **Salix alba L.** | **C_{daf} (%)** | **H_{daf} (%)** | **O_{daf} (%)** | **N_{daf} (%)** | **Ash (%)** |
| Wood            |                 |                 |                 |                 |                 |
| Sample 1        | 49,16           | 6,35            | 44,04           | 0,45            | 0,17            |
| Sample 2        | 50,00           | 6,47            | 43,08           | 0,45            | 0,18            |
| Sample 3        | 49,58           | 6,38            | 43,16           | 0,43            | 0,16            |
| Averages        | 49,58           | 6,4             | 43,43           | 0,44            | 0,17            |
| Bark            |                 |                 |                 |                 |                 |
| Sample 1        | 52,44           | 6,90            | 39,39           | 1,27            | 2,1             |
| Sample 2        | 51,15           | 6,91            | 40,70           | 1,24            | 2,5             |
| Sample 3        | 51,35           | 6,87            | 40,49           | 1,29            | 2               |
| Averages        | 51,64           | 6,89            | 40,19           | 1,26            | 2,2             |

Extended relative indeterminateness of the measurements

| U (%) | 5 | 5 | 2 | 5 |

Comparative analyses of the chemical composition of juvenile wood and the bark of wood produced from Salix viminalis cultivated at the energy plantation, and the chemical composition...
ENERGY CHARACTERISTICS OF THE WOOD-CHIP PRODUCED FROM SALIX VIMINALIS

of mature wood and bark from overmatured broadleaves trees show that the juvenile wood of Salix viminalis contains between 3%-19% more hydrogen than is commonly found in mature broadleaves wood [4, 9, 7, 12]. The comparative analyses also show that the juvenile Salix viminalis wood contains between 140%-380% more nitrogen than is commonly found in mature broadleaves wood [2, 8, 11].

The assessed higher content of nitrogen in the juvenile wood of Salix viminalis proves that there is a higher content of albumin in the plexus of the juvenile wood. The content of nitrogen in an immatured bark of Salix viminalis is about 121%-126% higher than the common share of nitrogen in bark of older broadleaves. This is caused by presence of albumin in cambium cells, as well as by chlorophyl in the surface plexus of the immature bark.

The experiments undertaken resulted in an assessment of the average share of bark \( X_k \) on the analysed wood chip:

\[
X_k = 23.86 \pm 0.334 \quad (\%)
\]

The assessed value \( X_k \) does not exceed the maximum limit (\( X_k = 30\% \)) set by the Slovak technical norm STN 48 0058, which was endorsed in 2004. The assessed value of the share of bark \( X_k \) is about 3 times higher than the share of bark on the wood of beech, about 2 times higher than the share of bark on the wood of oak and poplar, and about 1.7 times higher than the share of bark on the wood of alder [1].

The graph on the Figure 2 shows the temperature equilibrium of a higher heating value, measured in a calorimeter, of the wood sample of Salix viminalis and the graph on the Figure 3 shows the temperature equilibrium of a higher heating value, measured in a calorimeter, of the bark sample of Salix viminalis.

**Fig. 2. Equilibrium of a higher heating value of the analysed wood sample Salix viminalis**

**Fig. 3. Equilibrium of a higher heating value of the analysed bark sample Salix viminalis**

Table 2 below includes the results of measurement of the higher heating value of three samples of wood and bark of Salix viminalis, which were dried beforehand into a constant weight.

<table>
<thead>
<tr>
<th>Samples</th>
<th>Wood (kJ.kg(^{-1}))</th>
<th>Bark (kJ.kg(^{-1}))</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Higher heating value</td>
<td>Lower heating value</td>
</tr>
<tr>
<td>Sample 1</td>
<td>19 805</td>
<td>18 402.5</td>
</tr>
<tr>
<td>Sample 2</td>
<td>19 730</td>
<td>18 301.1</td>
</tr>
<tr>
<td>Sample 3</td>
<td>19 724</td>
<td>18 314.9</td>
</tr>
<tr>
<td>Average</td>
<td>19 753</td>
<td>18 339.5</td>
</tr>
</tbody>
</table>

The assessed higher heating value of Salix viminalis, in a dry state is comparable with the value poplar published by [6]: \( Q_s = 19880 \) kJ.kg\(^{-1}\).

The average value of the lower heating value of wood chip produced from Salix viminalis in a dry state with the average share of bark \( X_k = 23.86\% \) is determined by the formula (4) as \( Q_n = 18 308 \) kJ.kg\(^{-1}\).

**Conclusions**

Based on the experiments, the following conclusion can be made: Wood chip produced
from Salix viminalis which was cultivated at an energy plantage contains significantly higher shares of both hydrogen and nitrogen than is commonly found in the wood biomass of matured broadleaves. The share of bark on the same wood chip was assessed as X \text{K}=23.86\%.

Analyses of energy characteristics of wood chip produced from Salix viminalis show that the higher heating value of the juvenile wood of Salix viminalis in a dry state is Q_s=19753 \text{kJ.kg}^{-1}; for dry bark of the same wood it is Q_s=19732 \text{kJ.kg}^{-1}. The lower heating value of the wood chip of Salix viminalis in a dry state is Q_n=18308 \text{kJ.kg}^{-1}.

Acknowledgements

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MODELLING OF THE GRANULATION OF DECIDUOUS WOOD RESIDUES
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Abstract

The increased demand for energy and the limited reserves of fossil fuel have induced an increased interest in renewable energy resources. The support for the utilization of renewable resources has become an important constituent of the policy of the European Union. Energetics is a vital component of Latvia’s state economy. For all sectors of the national economy – industry, transport, services, as well as trade, household and agriculture, a modern energy service is necessary. This speeds up the economic and social development, increasing the efficiency of production and the incomes. Energy supply influences the creation of new working places and the efficiency of labour. In the present work, studies on granulation and the granules’ stability after removing the loads were carried out for the following deciduous tree species: grey alder, black alder, aspen, birch, ash-tree, oak, and, for comparison purposes, the conifer species such as pine and spruce.

Key words: granules, deciduous trees, wood residues

Introduction

Recently, solid biofuel has been widely used worldwide for heat energy production both for household and industrial needs, as well as for cogeneration. In household, the rises in energy prices and the effect on the quality of life are also severely felt. There are numerous phenomena in economy, which are directly derived from the state of the art in energy supply: the permanent growth in crude oil prices in the world’ market, and the subsequent rise of prices in the petroleum products’ wholesale and retail sale, the uncertainty in the safety of supply in almost all energy supply segments, the necessity to ensure the balance between the energy obtaining, generation, supply and consumption, and sustainable environment quality. Latvia is not the only state, which is affected by the growth in the prices for energy resources – as a global product, which is used in almost all industrial processes, petroleum influences also the economy of other countries. The provision with energy is an essential prerequisite so that to reach the balanced development, and the reasonable planning of energy can play an important part to ensure the state sustainable development. A special place among the energy types is occupied by electricity, which is the dominating form of energy and which ensures the communication, information technology, as well as the industrial and service activities. The energy policy is an element of the state infrastructure policy, and this is an important factor for economic competitiveness and development. Simultaneously, it is a vital environment protection element, because it is known that the biofuel, which is the least harmful to the environment and is one of the most widespread energy resource types in Latvia, is solid biofuel from the logging and wood processing industry residues and agricultural production residues (straw, cereals, nonconforming grain, etc.).

In wood chips granule production, using vertical or horizontal matrix with the material’s mechanical supply through filters and in briquette production with gradual compaction in special presses or by the extrusion method, conifer tree softwood sawdust is widely used, assuming that it is most plastic and easier susceptible to granulation, in comparison with deciduous tree sawdust, consuming a lower amount of energy to overcome the friction resistance.

The practitioners’ attempts to obtain qualitative granules from deciduous tree sawdust commonly are not successful or result in the mechanical damage of the granulator’s mechanism. The obtaining of granules is based on the effect of the material’ rheological properties, temperature, moisture and pressure, which applies to different fields of science: material science, rheology, wood science, chemistry, material resistance, etc. Hence, in the present work, the studies were based on the investigation of the rheological properties of the loose wood material depending on the pressure and granulometric composition at the room moisture.

Results and discussion

Studies were carried out on the granulation and granule stability after removing the load for the following deciduous tree species: grey alder, black alder, aspen, birch, ash-tree, oak, and for
comparison purposes, the conifer species: pine and spruce.

Material: ground wood, sieved through a sieve with the mesh size \( \phi = 2.0 \, \text{mm} \), mean initial moisture \( W_{abs} = 8-9\% \).

Granulation investigation methods: a dismountable cylindrical auxiliary device with the matrix and punch \( \phi = 8.0 \, \text{mm} \). For granulation regime studies, a universal testing machine „Roel Zwick/Z100“ was used, equipped with the software testXpert Version 11.02 for performing the experiments. The material sample 0.45 g, pressure – 150 MPa. To determine the granules’ hardness, a special tester (KAHL) with computer connection was used. The sample of the tested material was placed in a cylindrical auxiliary device with the matrix and punch \( \phi = 8.0 \, \text{mm} \). It was placed into a manual hydraulic press, and preliminary pressing till a known degree was carried out. Then it was transferred to the universal testing machine „Roel Zwick/Z100“, and the sample’s compaction was continued according to the set program till the pressure 150 MPa. Then the auxiliary device with the sample was taken away, and it was pressed out from the matrix using a manual hydraulic press, weighed with the accuracy up to \( \pm 0.0001 \, \text{g} \), and the granule length was measured with the accuracy \( \pm 0.01 \, \text{mm} \) in two contrary directions, and the length and diameter in two contrary directions were measured again after 1 min. The same measurement procedure was repeated also after 5 min. With one sample’s fractional composition, 5 – 10 replicates were made, from which the average value was calculated. Thus, it was possible to measure the granules’ relaxation (in the size change time) and thereby to judge its durability in time. The records of the testing machine made it possible to record the compaction degree depending on the applied load and to analyse the obtained results.

The main granulation – pressing stage mechanisms can be visualized in the following way. The material’s exterior compaction at the expense of the voids among the particles occurs at a minor pressure. Then the particles themselves, among which molecular bonds are arisen, are compacted and deformed. The high pressure at the end of pressing causes the particles’ reversible deformation in the transition plasticisation; as a result, the granules’ structure will strengthen, and the imparted or reached form will be retained: in this case, the released resin substances and extractives will harden the granules’ exterior part. The material’s warming-up exactly from friction during the pressing improves the process. The physico-chemical properties of the raw material have a major effect on the deformation.

The characteristic graph for the samples’ compression and their relaxation after removing the load is shown in Fig. 1. It can be seen that, at the fractions mixture 2,0–0,05 mm, the total progress of granules relaxation for all the tree species: oak, ash, birch, aspen, spruce, grey alder, black alder and pine is similar. Ash wood has the highest compression strength, but the lowest one is for grey alder wood, although the highest size relaxation is for grey alder wood, but the lowest one for oak wood.
MODELLING OF THE GRANULATION OF DECIDUOUS WOOD RESIDUES

The changes in the density of granules with the fraction 2,0–0,05 mm for different tree species after removing the load are shown in Fig. 2.

It can be seen that, also in this case, grey alder wood granules have the greatest relaxation scatter: density decreases from the initial density 1,38 g/cm³ to 0,86 g/cm³ within the first minute, and to 0,78 g/cm³ after 5 min. The most stable tree species among the investigated ones, with the lowest relaxation, is oak. The decrease in its granules’ density from the initial to 5 min is the lowest, namely only 24%, followed by ash – 27%, spruce – 35%, pine – 39%, black alder – 46%, birch – 49%, aspen – 55% and grey alder – 77%.

It can be seen that the chosen granulation pressure 150 MPa is acceptable, because the final pressing density of all tested tree species exceeds the density required in the granule standards [1 - 3] of 1,0 g/cm³ (ash – 1,18 g/cm³, oak – 1,20 g/cm³, spruce – 1,23 g/cm³, birch – 1,27 g/cm³, black alder and pine – 1,28 g/cm³, and aspen and grey alder – 138 g/cm³. The relaxation of aspen, grey alder and spruce wood granules’ sizes depending on the granulometric composition is shown in Figs. 3 and 4.
Fig. 3 and 4 show that a common tendency is retained both for deciduous trees and spruce wood, the compactability of the samples increases and the size relaxation value decreases with decreasing granule fraction sizes. The best granulometric results (respectively, the decrease of density after removing the load) are for the following deciduous tree species: oak, ash, which prevail the coniferous tree species - spruce and pine, regarded as classically suitable for granulation. The highest density relaxation is for grey alder, followed by aspen, birch and black alder.

In terms of the density relaxation value, black alder wood lags behind the pine wood only by 4.2%, and the spruce wood by 8.8% at the relaxation index 145%, common for all species.

Thus, only a part of the deciduous tree species (grey alder, aspen and birch) is less susceptible to granulation than the coniferous tree species – spruce and pine.

Conclusions
All tested tree species (grey alder, black alder, aspen, birch, ash, oak, pine, spruce) are characterised by a similar relationship between the samples’ compression and their relaxation after removing the load. Thus, at the fraction mixture 2.0–0.05 mm, the common granules relaxation progress for all tree species: oak, ash, birch, aspen, spruce, grey alder, black alder and pine is similar. The highest compression strength is for ash wood, but the lowest one for grey alder wood, although the highest size relaxation is for grey alder wood, but the lowest one for oak wood. The best granulation results (the lowest size relaxation and, respectively, decrease of density after removing the load) is for the following deciduous tree species: oak, ash, which prevail the coniferous tree species – spruce and pine, regarded as classically suitable for granulation. The greatest relaxation is for grey alder, followed by aspen, birch and black alder.

In terms of the relaxation value, black alder wood lags behind the pine wood only by 4.2% and the spruce wood only by 8.8% at the average relaxation index 145% for all the species. Thus, as a result of these studies, it is possible to say that only a part of deciduous tree species (grey alder, aspen and birch) is less susceptible to granulation than the coniferous tree species – spruce and pine.

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CHALLENGES OF IMPLEMENTATION OF GOOD AGRICULTURAL PRACTICES IN KURDISTAN REGION, IRAQ

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Abstract

Overall, the application of good agricultural practices in Kurdistan region, Iraq is based on the general concept of integrated crop management. The good agricultural practices are essential components of environment-friendly and economically viable production systems relying on modern technology and aimed at producing high quality food in an efficient manner. Good agricultural or better horticultural practices (GAP) should consist in a set of most suitable tools to guarantee quality and assure safety for consumption. All kind of production should utilize GAP technologies, whether in integrated or organic cultivation. Good Agricultural Practices (GAP) are internationally acknowledged measures for decrease a risk as a result of pesticide and fertilizer use and they aim at protecting of human health and stable agricultural development free of environmental contamination. Their initiating in Kurdistan region, Iraq is forced by the world globalization and opening of the markets that places the food quality and safety in the foreground. In view of obtaining safe and healthy food and noon food agricultural products taking also into account economical social sustainability, in recent years have been proposed and implemented Good Agricultural Practices (GAP), representing a collection of principles to be applied to on-farm production and post-production processes. In the context of rapidly changing and globalizing food economy the concept of GAP has evolved in recent years. Therefore the GAP is becoming an increasingly important issue for many production area regardless the level of intensification of production processes.

Key words: Good agricultural, practices, safety food, environment, human health, economics, sustainable development

Introduction

Good agricultural practices are considered with the requirements of the European legislation to the factors of the working conditions for safety and healthful labor conditions, set in a number of regulation documents. GAP is developed according the requirements of the European Community legislations about:

− Soil and water protection;
− Plant protection from diseases, pests and weeds by applying of preventive measures and methods for integrated control;
− Requirements for use of fertilizers, composts, biologically active substances, nutritive substrates and products for plant protection.

The methods on which GAP are based rely on the amount and quality of produced food, on the protection of natural resources, on the maintenance of farming enterprises viability, the meeting pf social demand. Many aspects are considered in the GAP (e. g.: water, soil, fertilization, etc.), however no specific reference is made to propagation material as a starting condition for a „good“ production process; this in spite the role that the quality of propagates on crop response may play. GAP must include physical, chemical and biological measures to meet all safety standards for quality fruits and vegetables. Here hide constraints which must be overcome. All operational inputs are of concern and have to be carefully analyzed such as soil, water, choice of seeds and cultivars, necessity, timing and application of agrochemicals, application of organic and inorganic fertilizers, resulting in good integrated crop (ICM) and integrated pest management (IPM), and even handling of labor.

1. GAP in Greenhouses

Specifically in greenhouses, the good agricultural practices include mainly:

a. Use of biological methods for pest control whenever possible;
b. Selective use of low-toxicity pesticides where there is severe pest infiltration but detailed records must be kept;
c. Controlled entry of personal inside the greenhouse;
d. Other non-chemical plant protection measures, such as insect nets and photo-selective covering materials;

e. Modern equipment allowing for maintenance of optimal climatic conditions inside the greenhouse;

f. Balanced fertilization and irrigation based on soil analysis and crop demand;

g. Control of soil-borne pathogens by non-chemical means, such as grafting, soil solarization, and soilless culture;

h. Use of pollinating insects (bumblebees) for fruit setting in fruit vegetables.

Under greenhouse conditions crop establishment must be carried out adopting seedlings with high qualitative standards and capable of adapting to conditions which could be encountered under intensive agroecosystems. However, while genetic and sanitary quality is well defined, agronomic qualitative parameters should be better identified. Simple methodologies to define these characters must be individualized; besides, qualitative standards have to be defined according to: crop agrosystems, species, cultivars, seedling typologies, etc.

2. Good agriculture practices in seedling production

"Well begun is half done" - Good Agricultural Practices aim in seedling production is producing of healthy seedlings with high qualitative characters without any risk of soil and water contamination.

In protected cultivations, as well as in other intensive production agrosystems, good quality propagation material should be adopted considering that growers more and more frequently demands for seedling vigor and size suitable for a good crop performance. Seeds and other propagation materials should be specified and suppliers should provide all necessary information relating to the identity, quality and performance of their products, as well as their breeding history, where possible. The propagation of planting materials must have the appropriate quality and be free from contamination and diseases in order to promote healthy plant growth. Planting material should preferably be resistant or tolerant to biotic or abiotic factors.

According to EU regulation the quality of propagation material should comply with regional and/or national regulations and be appropriately labeled and documented, as required. In the last decades thanks to different national and EU regulations we observed an implementation of the standards and conditions with respect to varietals identity and purity, biological and physiological value, health status with respect to harmful organisms which affect the quality of the plant material in conjunction with quarantine pest/diseases, etc.

For this reason seedling industry has greatly improved and specialized during last decades and is now capable of producing seedlings with well defined characteristics differing in relation to grower demand. Those characteristics mainly concern rhizosphere volume and shape, root growth, seedling height, number of true leaves, presence or not of flower bud. In general a "good" vegetable transplant should be green, pest-free, with well developed root system, strong stems, a sufficient leaf number (varying according to species and growing conditions) and have an high percentage of chlorophyll. The plantlets once transplanted should establish quickly and continue to growth. Grafting on pest and disease resistant rootstocks is currently also tested as an alternative to soil sterilization, especially in crops susceptible to Fusarium. Nevertheless, grafting does not provide protection against all soil-borne pathogens, insects, nematodes and weeds, and, therefore, it cannot be considered a complete substitution for methyl bromide.

GAP is a set of technological requirements for seedlings growing that are a premise for production of qualitative seedlings, including the following:

a. The choice of the variety should be based on the period on cultivation and its continuance, growing technology and properties of the variety - disease resistance, earliness, productivity, habit and quality of the produce.

b. The seeds should be authentic, certified, treated; classified, sized and with high sowing qualities -
   - Seed germination over 96%;
   - Purity of the variety over 98%;
   - Moisture 6-8%.

c. The nutritive medium should be uniformed, weed seeds free and pathogen free. It should maintain favorable for plants both air-water and nutritive regime.

On the other hand some cultivars should be taken into consideration, these rely mainly on the outstanding number of cultivars (from local eco-
types to F1 hybrids) and species and on the diversification of seedling typologies (e.g.: organic, topped, grafted, etc.). Therefore possible strategies could be the result of a better understanding of cause effect relation between seedling characteristic and crop performance and to the integration of information related to transplant production for raising seedling with definite characteristics.

3. Rules for good agriculture practices in soil fertility regulation and improvement

Greenhouse production of vegetables and flowers creates a real risk of a soil fertility deterioration and produce ecological properties worsening. It results both in the natural processes of degradation and in intensive anthropogenic work. The rules for Good Agricultural Practices are a collection of cultural methods that share the environment and their application helps for supporting of the ecological balance for regulation and improvement of soil fertility, for production of high quality produce.

GAP requires monitoring of agrochemical properties of the soils and creation of correct system for nutrition and efficient and rational use of fertilizers on the basis of the soil and plant chemical analysis. The rules, requirements and time limits for taking of soil and plant samples were developed in EC and this is the first and most important stage of the soil agrochemical study. Good Agricultural Practice requires fertilizers, composts, biologically active substances, nutritive substrates and other soil-improvers that are used to cover the conditions fixed in the law and regulation documents in the EC. A complex of coordinated measures in the system of fertilization aims at the rational and efficient using of fertilizers in the growing crop conditions is included in the GAP. The choice of the terms for fertilizer applying and the ways of fertilization aim at providing the plants with nutritive substances during the whole vegetation period. In fertilization Good Agricultural Practice is confirmed with the kind of used fertilizers and their effect on the soil fertility, the level of the nutritive elements remaining in the soil and the requirements of the growing crop.

GAP in use of organic fertilizers requires the following:

- Preliminary composting of the fertilizers that increase the humus content of the soil rapidly at a reduced risk of its infestation with pathogens and running through weed seeds.
- Do not use none-decomposed or slightly decomposed manure and chicken manure especially in fertilizing.
- „Manure solution” could be applied only in cases when the distance to the surface water sources (rivers, water courses, channels, lakes, artificial lakes, seas etc.) is not smaller then 5 m.

Good Agricultural Practice in mineral fertilization includes activities that protect the soil from diffusive contamination and/or unfavorable change of the nutritive regime:

- It’s impossible a single application of a great amounts of fertilizers.
- Application of ammonium fertilizers immediately after liming is not permitted. This result in ammonium poisoning of the plants, contamination of the atmosphere and loss of nitrogen.
- Use of great doses of ammonium fertilizers in months with poor light conditions is not permitted in order to avoid the ammonia blight of the plants.
- Do not use ammonia fertilizers in acid soil.
- The required nitrogen rate to be applied in a small doses and do not allow one-sided nitrogen fertilization because it results in a number of negative effects - overgrowing in the vegetation period, increase of the risk from diseases and pests, vegetation period prolongation, delay of ripening etc.
- Use of chlorine-containing potassium fertilizers is not recommended, especially in crops susceptible to chlorine - tomato, cucumber and melon.
- The soluble fertilizers to be applied in small doses and in short intervals.
- Fertilization in zone II of the sanitary-protected area from the water sources for public water-supply where the nitrate content is higher then 25 mg/l is forbidden.

Good agricultural practices in use of the bioproducts in the greenhouse production is a collection of cultural manners and their application increases the effectiveness of the bioproducts as an alternative of mineral fertilization and as ecological solution for soil fertility improvement. This is as a result of the improved soil microflora and/or the applied humus and biological
active substances. GAP requires obligatory use of bio-products, containing useful microorganisms after biocide soil treatment (fumigation, steaming) in order the soil micro-flora to be restored quicker and in compost production - to accelerate the composting and to increase the compost quality. Good Agricultural Practices includes a complex of coordinated measures from the system of fertilization aiming at not permitting soil acidification and salting as degenerative processes harmful both for soil fertility and for the plants:

- Application of organic fertilizers for improvement of the buffer and water-keeping soil ability.
- Fertilization with mineral fertilizers accordingly their hydrolytic and physiological reaction and the soil response.
- Correction of the soil response by liming, gypsuming or cultural methods.
- Irrigation with waters possessing qualitative characters according to the EC Community Standards, and National Standards.

GAP recommends farmers to keep review documentation where they should record all important details from their production practice and to save the data. GAP includes the following prohibitions and they refer to all farmers:

- Do not throw away fertilizer and packing remains in the surface waters and in deserted wells;
- Do not wash the packing, special clothing and equipment connected with fertilization in rivers, artificial lakes and other surface water places;
- Do not store organic and mineral fertilizers on the areas near to water sources or rivers.

4. GAP and pest control

In addition to the use of non-chemical pest control methods for the above-ground parts of the plants, it is essential to restrict the application of pesticides also for the control of soil-borne pathogens. According to the Montreal protocol, the use of methyl bromide as a soil fumigant was phased out since 2005 in the developed countries, while a phase-out from the developing countries has been scheduled for 2015. To cope with this new situation, various alternatives are currently proposed and tested against soil-borne pathogens.

Soil sterilization by means of steam pasteurization is an old and well-proven practice. Application of 71°C for 30 minutes is sufficient to kill all soil-borne pathogens except few resistant weed seeds and some plant viruses, while preserving many thermophilic beneficial microorganisms. The main reason for the poor interest in this method is the cost of purchasing a steam generator, which is too high for most growers.

Grafting on pest and disease resistant rootstocks is currently also tested as an alternative to soil sterilization, especially in crops susceptible to Fusarium (Solanaeae, Cucurbitaceae) Nevertheless, grafting does not provide protection against all soil-borne pathogens, insects, nematodes and weeds, and, therefore, it cannot be considered a complete substitution for disinfection with methyl bromide.

Substitution of methyl bromide by other chemicals, such as metam-sodium, 1,3 dichloropropene (1,3-D), chloropicrin, and their combinations have also been tested. However, the application of these chemicals requires long plant-back periods, otherwise phytotoxicity may occur. Furthermore, these chemicals are not effective against all soil-borne diseases. The inoculation of the greenhouse soil with suppressive soils containing fungi and bacteria species, which act antagonistically to certain pathogens, might be an environment friendly alternative to methyl bromide. However, the microorganisms tested up to date are specialized against one or, at best, a few pathogens, and can be used only when these particular pathogens or pests constitute a serious threat for the crop. Soil solarization is one of the most promising alternatives to the use of methyl-bromide disinfection in greenhouses. This technique is based on trapping the visible and ultra-violet solar energy in the greenhouse soil by means of a polyethylene sheet, which is used as an air and water-tight cover on its surface. Normally, most of the visible and ultra-violet radiation absorbed by the soil is converted into thermic energy, which is re-emitted back to the environment as infra-red radiation.

5. General consideration for greenhouse GAP

The establishment of new greenhouses and the modernization of already existing installations should essentially be based on a functional design aimed at optimizing the greenhouse environment while minimizing the need for agrochemicals. Greenhouse facilities enabling maintenance of optimal climatic conditions inside the
greenhouse constitute a prerequisite for the application of good agricultural practices.

A functional greenhouse design includes among others sufficient static strength, optimal orientation depending on the location and the topography, use of covering materials and structures resulting in minimal reduction of light transmission inside the structure (>80%), and sufficient greenhouse equipment taking into consideration the climatic conditions of the location, the crop needs, the target growing season, the fuel, land, and water availability, and the cost. Overall, tall greenhouse structures (3-6 m) are preferable since they provide more space for plant elongation, enhanced CO₂ reserves and a more efficient buffering of the inside temperature. Sub-optimal greenhouse height is a serious problem, which restricts their prospects to provide high yields and optimal produce quality.

The problems arising from an insufficient greenhouse height include large temperature and humidity fluctuations during day and night, and the imposition of short growing seasons in fruit-bearing vegetables, which otherwise would have a potential for long-term production (e.g. tomato).

The use of fine-mesh screens to reduce insect entry into the greenhouse has become a common practice in many countries during the last years. Insect exclusion by means of screened openings is a fundamental measure within the frame of Integrated Crop Management (ICM) strategies in greenhouses, since it is an effective means not only to reduce insect damage but also to avoid virus infections. This problem may be tackled by increasing the surface percentage of vent openings. Another non-chemical method of pest control in greenhouses is the use of photo-selective covering materials, which may influence the insect activity inside the greenhouse. The photo-selective plastic sheets with plant-protective attributes contain specific substances which reduce or even eliminate the transmission of ultra-violet (UV) radiation (280-400 nm). The absence of UV radiation in the spectrum of the incoming solar radiation results in insect disorientation, thereby considerably restricting their activity inside the greenhouse, while the yield is not affected by this treatment.

6. GAP in open field plant cultivation

Monoculture producing cannot be applied, except for annual fodder, bee pastures and green manure plants:
- For crop rotation the following guidelines must be applied:
  - Sugar beet, beetroot, turnip, potato, field bean, soy and lupine can be grown in the same field only once in every four years;
  - Sunflower can be grown in the same field only once in every five years;
  - At least once in every five years papilionaceae or green fodder must be grown in the rotated field, including successive secondary crops;
  - Dried peas can be grown only once in every seven years;
  - Maize can be followed only by plants of low nitrogen need;
  - At least two-year period of lapse must be kept between the growing of two non-annual papilionaceae;
  - Alfalfa cannot be followed by any other papilionaceae, and after Alfalfa, the follow-up crop must be of high nitrogen need;
  - Soy, sunflower and summer rape cannot follow one another;
  - In the crop rotation the joint rate of spicate and maize cannot exceed 75%.
  - Mechanic weed control must be carried out prior to weed flowering.
  - Application of soil preparation at different depths annually.
  - Straws bales must be removed from the field within one month after gathering.

7. GAP in Nutrient management
- Focused soil analysis is required in every five years (pH, humus content, KA, total of water soluble salts, CaCO₃, NO₂+NO₃, P₂O₅ and K₂O)
- Soil improvement and spreading of treated sewage, sewage sludge and liquid livestock waste can be carried out with the consent of the plan and soil protection service in accordance with the relevant regulations.
- When applying nitrogen fertilizers, farmers must not exceed the maximum values calculated for unfavorable and non
unfavorable areas, as well as nitrate sensitive and non-nitrate sensitive areas.

- In nitrate sensitive areas it is obligatory to follow the regulations of the action program (determined by governmental decree).

- In non-nitrate sensitive areas the following regulations are applicable:
  a. Manure can be spread to steeper slopes as long as it is incorporated promptly.
  b. It is forbidden to spread manure within at least ten meters of water source, such as well that supplies human or animal consumption, as well as floodplains and immediate areas of watercourses.
  c. Quick acting, soluble nitrogen fertilizers, addle and liquid waste can only be spread after harvesting in the same year, if less than fourteen days have elapsed between the spreading and the sowing of the cover crop.
  d. It is forbidden to spread manure when the soil is frozen hard (the soil is frozen to the depth of five centimeters), waterlogged or snow covered.
  e. Soil manure must be kept in an impermeable manure store with a collection channel and a below-ground tank to hold leechate, which has a storage capacity of at least eight months of livestock waste. Liquid waste is to be kept in an impermeable storage tank or lagoon with a storage capacity of at least four months of waste material.

8. GAP in pest control

Only authorized pesticides and fertilizers can be used, in compliance with technological and licensing regulations. Pesticides must be kept in a store room or cabinet which is locked and separated from other rooms housing people or animals or used for storing human or animal food, in a way which prevents fire or explosion, and damages to health and the environment (in accordance with ministry orders on pesticide circulation and application, and the packaging, labeling, storage and transportation of pesticides). It is forbidden to store pesticides within at least one kilometer from:

- the full length of the coastlines, and other natural waters designated for swimming;
- protective areas around waterworks and water resources.

Empty packages and wrappings of pesticides must be collected, treated and disposed of in accordance with the relevant regulations. The machinery and pesticide spreaders used to protect plants must be in perfect technical condition.

9. GAP for Conservation and landscape protection (in nature reserves and environmentally sensitive areas)

Farmers should avoid damaging natural or semi-natural habitats when performing an agricultural activity (plowing, spreading manure or chemicals, or destroying landscape components). Farmers should avoid damaging or ruining historical and architectural monuments and sites situated in the territory of the farm. Farmers cannot alter the size of the parcel of land. Ameliorative liming, drainage and irrigation are forbidden.

Farmers are only allowed to apply environmentally favorable mowing methods and technologies (starting to mow from the center of the land, leaving edges to the end).

Construction of temporary or permanent buildings is possible only with the consent of the management of the given national park.

The time for mowing on protected marshes must be determined on an individual basis by consulting the experts of the given national park.

Existing alleys, forest belts and old trees must be protected. In the course of technological operation related to cultivation (haystacks, bales, manure heaps etc.) can only be created on cultivated land. Upon finding nest of increasingly protected birds, farmers must immediately report it to the given National Park. Only natural material (wood, cane) are allowed to be used to build night shelter for animals.

Shepherds’ accommodation must fit in with the landscape and be built by using traditional building materials and methods. Ponds and inland water spots must be preserved.

10. GAP in soil erosion

In areas exposed to erosion, the soil must be protected with crop cover until the sowing of spring crop.
– Contour cultivation is required in areas exposed to erosion.
– Terraces established to prevent erosion must be preserved.
– It is forbidden to grow root crops on slopes with an angle higher than 12 percent.
– Green stripes (hedges, field borders) are to be preserved.
– Operations resulting in soil opening must be followed by soil closing operations.

The increasing concern of consumers with the safe and quality of fresh vegetables and other food products originating from agriculture forced the large supermarket chains in Europe to establish a comprehensive system of certification. This system is based on the establishment of GOOD AGRICULTURAL PRACTICES in form of specific protocols that should be implemented by growers who wish to obtain certification for their products. This certification system, which was known as EUREPGAP up to last year, was recently renamed into GLOBALGAP. The application of the prescribed good agricultural practices is aimed at minimizing detrimental environmental impacts of farming operations, reducing the use of chemical inputs and ensuring a responsible approach to worker health and safety (www.globalgap.org). A major characteristic of this system is the traceability of the product with respect to the delivery chain from the field to the shelf, which increases the responsibility of the growers. Traceability aims at ensuring that all food products are documented at every step of food production, delivering, and distribution. Certification of the production procedure according to the GLOBALGAP standard is a prerequisite for the product to be marketed by joined retailers. The introduction of the GLOBALGAP certification system had serious consequences on greenhouse vegetable production, since it is currently a prerequisite for greenhouse growers who wish to export their products to the large fresh vegetable markets of Europe.

11. Organic Culture in Kurdistan Region of Iraq

Organic culture was and still the dominant Agricultural mode in Kurdistan Region. Since, the most of farms especially fruit trees orchards are highly depending on organic manures for increasing soil fertility. Further than, the lack of genetically modified cultivars and the reducing of the use of chemical fertilizers. In spite of these specifics which are regarded as essential for approving organic culture, but any farm or field of organic culture has not been registered yet in the Region. The most important reason behind that might be due to the absence of a formal approved organization able to issue the required certifications to regard such farms as organic culture farms.

The ministry of Agriculture is working hard to improve organic culture by applying many attempts to achieve training courses for the Agricultural staff like:

a. Participating of a number of employees abroad of Iraq in order to benefit from the foreign experience in this category. Where three of the Agricultural ministry employees participated in a training course in Australia about IPM. As well as, another number of employees in a training course about compost preparation in Australia.

b. Two of the employees applied two field illustrations for the production and use of compost by participating of about 30 farmers in each. These sessions were applied by the program of reactivation of Agricultural extension in Iraq (IAER) sponsored by the American Universities including the University of Texas A and M.

c. It is proposed to send the employees to CIHEAM institution in Bari, Italy to participate in an IPM training session.

d. Exporting organic pomegranate (produced from organic orchards in Halabja, Suleiman city) to Dubai/UAE through INMA/USAID.

COMPOST has been prepared by some of research centers in Kurdistan Region of IRAQ in which 45 tons of the COMPOST has been prepared by local methods to be used in agricultural researches. We suggest the followings:

a. Preparation of specific training sessions for Agricultural extension employees in the ministry of Agriculture and for the teaching staff of Agricultural Colleges in the Region in order to prepare well-practiced persons (TOT) in Organic culture.

b. Applying extension training courses for farmers to introduce them with organic culture and it’s economic and healthy advantages.
c. Including the course of organic culture into the approached courses of agriculture Institutions and Colleges.
d. Establishing internationally dependent bureaus and companies for investigating and issuing specific certificates for organic culture according to international standards.
e. Preparation of a complete plan for organic culture in both scientific research centers and Agricultural Colleges.
f. Contacting specific organizations of organic culture all over the world for coordination and benefiting from their experience in this category.

Reference
2. International Association of Food Protection: http://www.foodprotection.org
5. Center for Disease Control and Prevention: http://www.cdc.gov/
10. Environmental Protection Agency: www.epa.gov
12. EUREPGAP: http://www.eurep.org/sites/index_e.html
15. Food Safety Consortium at Iowa State University: http://www.foodsafety.iastate.edu
17. www.slideshare.net/dduchar/good-agricultural-practices-d-ducharmee
ТЕНДЕНЦИИ РАЗВИТИЯ ЭКОНОМИК СТРАН БАЛТИИ
В УСЛОВИЯХ ЭКОНОМИЧЕСКОЙ ПЕРЕСЕЧЕНИЯ

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Резюме

В статье представлен аналитический обзор развития стран Прибалтийского региона (Литва, Латвия, Эстония) с момента вступления в ЕС и до настоящего времени в контексте влияние на их экономическое развитие мирового экономического и финансового кризиса. На основе сравнительного анализа динамики изменения макроэкономических показателей развития экономик стран Балтии сделаны выводы о бесперспективности неолиберальной экономической модели развития, которая привела Латвию к фактической утрате своего экономического суверенитета и необходимости перехода к новой экономической модели, ориентированной на развитие производства, а не на перераспределение финансов.

Ключевые слова: страны Балтии, развитие рынков, макроэкономические показатели, экономическая рецессия

Введение

Расширение Евросоюза явилось итогом процесса исторического объединения Европы. Прибалтийские страны в 2004 году вместе вошли в состав Европейского Союза, определив тем самым их дальнейшее развитие. Политикам не были даны в полном объеме ни реальное положение экономики в этих странах, тесно связанное с Востоком, ни предосредственными ученых, ни предосредственными тактиков. Вступление Прибалтики в Евросоюз было воспринято как укрепление стабильности рынка, что, в конечном итоге, привело к расширению экономики в этом регион в основном шведских банков и резкому снижению процентных ставок на выдаваемые кредиты. Появившиеся в регионе "дешевые" деньги и льготная экономическая среда привлекли иностранных инвесторов, что послужило причиной высоких темпов роста экономики всех трех стран: Литвы, Латвии и Эстонии. Экономика этих стран переживала настоящий бум благодаря доступу к рынкам Европы. При этом банки охотно прибегали к заемным средствам для стимулирования внутреннего кредитования, особенно в сфере недвижимости. Строительный бум и выстраивание "ипотечных пирамид" привело к бурному развитию отрасли, что, в свою очередь, способствовало росту внутреннего потребления и давало ежегодную солидную прибавку к ВВП; темпы роста ВВП в Прибалтийских государствах, начиная с 2000 и по 2007 год заметно превышали темпы роста ВВП в странах Западной Европы. По итогам 2007 года Латвия по темпам роста ВВП находилась на третьем месте на постсоветском пространстве. Балтийские государства в этот период даже окрастили "Балтийским тигром" по аналогии с "Южно-азиатским тигром". Явление "Балтийского тигра" имело место после важных экономических реформ, которые в сочетании с достаточно низким уровнем заработной платы и относительной дешевизной, но квалифицированной рабочей силой привлекли внимание иностранных инвесторов и большое количество иностранных инвестиций в этот регион.

Однако политическая эйфория от расширения ЕС привела к недооценке экономических рисков, наиболее значимым из которых стала высокая ипотечная задолженность. В условиях кризиса это привело к резкому ухудшению всех составных показателей экономического развития региона. Вместе с тем, предпосылки кризисной ситуации проявились задолго до начала кризиса. По мнению показателей Латвия среди новых стран — членов ЕС находилась в зоне высокого риска, к примеру, по соотношению внешнего долга к ВВП Латвия стояла в одном ряду с Болгарией и Румынией. Резкое падение промышленного производства в сочетании со значительным бюджетным дефицитом, огромные валютные долги, большая зависимость от внешнего финансирования стали серьезным испытанием для строительников ЕС.

Цель данного анализа: обратиться к основным макроэкономическим показателям
состояния экономики прибалтийских стран
для того, чтобы попытаться определить ту
степень негативного воздействия экономичес-
kого кризиса, которую испытывают рынки
Прибалтики в настоящее время и наметить
перспективы выхода из создавшейся ситуации.

1. Анализ динамики ВВП

Одним из важнейших показателей сис-
темы национальных счетов является валовой
внутренний продукт (ВВП), темпы роста кото-
рого представлены в табл. 1. и на фиг. 1.

В связи с экономическим кризисом –
показатель ВВП упал во всех странах ЕС. На-
иболее резко это проявилось в странах Бал-
tим: Эстонии, Латвии и Литве.

Причем в Латвии значительный рост ВВП
приходится на 2005-2006 гг., затем наблюда-
ется постепенное снижение в 2007 г., а в на-
чале 2008 г. ВВП достиг нулевой отметки.

После чего на конец 2008 г. его значение уже
было минусовым (-4,6%). В Эстонии на 2008
г. рост ВВП достиг отметки в – 3,6%, а в
Литве - нулевой отметки (фиг. 2.). Таким об-
разом, в 2008 г. показатель ВВП во всех при-
балтийских странах после перерыва экономи-
ки начал снижаться. В прошлом году ВВП
Латвии снизился на 18%, в текущем его па-

Табл. 1. Темпы роста ВВП в новых странах-членах ЕС (%)

<table>
<thead>
<tr>
<th>Страна/год</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009 (прогноз)</th>
<th>2010 (прогноз)</th>
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<td>0,5</td>
<td>-4,1</td>
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<td>6,2</td>
<td>6,0</td>
<td>-5,9</td>
<td>-1,1</td>
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<tr>
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<td>3,6</td>
<td>4,5</td>
<td>6,3</td>
<td>6,8</td>
<td>6,1</td>
<td>2,5</td>
<td>-4,8</td>
<td>0,8</td>
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<td>9,4</td>
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<td>10,0</td>
<td>-4,6</td>
<td>-18,0</td>
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<td>1,2</td>
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<td>7,3</td>
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<td>6,2</td>
<td>-5,8</td>
<td>1,9</td>
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Источник: Eurostat [1]

Фиг. 1. Рост ВВП в период с 2003 г. по 2009 г. (с прогнозом на 2010 г.)
ТЕНДЕНЦИИ РАЗВИТИЯ ЭКОНОМИК СТРАН БАЛТИИ В УСЛОВИЯХ ЭКОНОМИЧЕСКОЙ РЕЦЕССИИ

dение может замедлиться и достичь – 4%. Почти такая же ситуация наблюдается и в Литве, что говорит о том, что экономика вошла в фазу резкой коррекции. Эстонская экономика все еще держится в начале экономического цикла балтийских стран и находится в сравнительно лучшей ситуации по сравнению с соседями по Балтийскому региону.

2. Анализ динамики дохода на душу населения

Анализ следующего показателя экономического состояния рынка – дохода на душу населения (табл. 3.) - показывает, что Прибалтика замыкает список стран ЕС по этому показателю вместе с такими странами, как Польша, Болгария и Румыния.

<table>
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<th>2004</th>
<th>2005</th>
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<th>2008</th>
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</table>

Источник: Eurostat [1]

При этом экономика Латвии, во многом благодаря взрывоподобному увеличению потребления, развивалась в очевидном дисбалансе. Поэтому и коррекции происходят стремительнее, чем в других странах. Происходящая внутренняя девальвация, которая проявляется в уменьшении зарплат и цен, продолжает ограничивать экономическую активность. В стране сильно упало внутреннее потребление. Так, например, спад в строительной отрасли составил 36%, в общественном питании – 31%, в торговле 28,7%, в сфере индивидуальных услуг – 20% [2].

3. Анализ динамики инфляции

Важнейшим параметром, характеризующим экономику страны, является показатель инфляции (табл. 4., фиг. 3.).
Табл. 4. Ежегодный средний рост инфляции в новых странах-участницах ЕС

<table>
<thead>
<tr>
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<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
</tr>
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</tbody>
</table>

Источник: Eurostat [1]

Фиг. 3. Изменение инфляции по отношению к предыдущему периоду

Достаточно большой вклад в рост инфляции в еврозоне вносят новые члены Евросоюза: переход на евро и перевод местных цен к уровню западноевропейских приводит к дополнительному росту инфляции в еврозоне как минимум на 0,3% ежегодно. По данным Eurostat, в целом по ЕС в декабре 2009 года была зарегистрирована годовая инфляция в размере 1,4%, в еврозоне – 0,9%. Годом ранее инфляция в ЕС составляла 2,2%, в еврозоне – 1,6%. Самой высокой инфляцией была в Венгрии – 5,4%. В Румынии она составила 4,7%, в Польше – 3,8%, в Швеции – 2,8%, в Греции – 2,6%, в Люксембурге – 2,5%, в Словении – 2,1%.

В пяти странах ЕС в декабре прошлого года произошло снижение цен по сравнению с тем же периодом прошлого года. Самой высокой дефляцией была в Ирландии – 2,6%. В Эстонии дефляция составила 1,9%, в Латвии – 1,4%, на Мальте – 0,4%, в Португалии – 0,1%.

Латвия стала лидером по темпам роста инфляции среди стран Евросоюза в 2008 г. (15,3%). 2009 год стал поворотным – цены стали падать и по итогам года снизились на товары на 1,2%, на услуги – на 1%. Главной причиной дефляции было падение цен на продовольствие и энергоресурсы, одежду и обувь. Также понижающее влияние на уровень потребительских цен оказалось падение цен на гостинично-ресторанные услуги. Повышающее влияние на уровень потребительских цен в прошлом году оказало подорожание алкоголя и табачных изделий вследствие роста НДС и акцизного налога. Дороже стали такие коммунальные услуги – водоснабжение, канализация и вывоз мусора, электроэнергия, а также такие жизненно важные услуги, как меди-
4. Анализ динамики роста заработной платы

С показателем инфляции всегда связан показатель роста заработной платы.

Среди стран Балтии самая высокая средняя брутто-зарплата в третьем квартале 2008 г., и в предыдущие периоды, была в Эстонии — 800 евро (560 латов), а самая низкая в Литве — 672 евро (470 латов). Прирост в Латвии составил 20,3%, в Литве —19% и в Эстонии 14,8%. Как передает агентство Reuters, в третьем квартале 2009 года в 16 странах еврозоны средняя часовая оплата труда увеличилась на 3,2%, при том, что во втором квартале рост составлял 4,3%. Другие расходы работодателей на рабочую силу (включая налоги) в течение последних трех месяцев выросли на 3,6%, тогда как во втором квартале рост составлял 4,6%. Лучше всего дела обстоят в Финляндии и Германии — там зарплаты выросли на 6,2 и 4,8% соответственно. Прирост в Испании и Португалии составил 4,7%. Что касается всех 27 стран — участниц ЕС, то здесь в течение третьего квартала уровень заработной платы упал только в трех странах — Латвии, Эстонии и Литве”, — отмечает Reuters [3].

В 2008 году Латвия стала самой бедной страной Евросоюза. По данным авторитетного статистического агентства „Евростат”, здесь был зафиксирован наиболее высокий показатель риска нищеты - 26 процентов. За Латвией следуют Румыния (23 процента), Болгария (21 процент), Греция, Испания и Литва (по 20 процентов). В целом, по данным агентства, риск нищеты угрожал 17% населения Европейского Союза. Иными словами, их доходы оказались за чертой бедности. Любопытно, что экономический кризис, вопреки ожиданиям экспертов, не сказался на общем количестве нищих в странах Европы. Так, с 2005 года уровень риска нищеты в ЕС был почти стабильным и колебался в пределах 16-17 процентов.

В настоящее время наблюдается тенденция к снижению заработной платы, так и уровня инфляции. Эти процессы протекают на фоне снижения уровня занятости и роста уровня безработицы [4].

5. Анализ динамики безработицы

На рынке труда ЕС за последние годы показатели безработицы улучшились, достигнув исторически низких уровней и соответственно увеличения показателя занятости, однако в связи с мировым экономическим кризисом, эта картина очень сильно изменилась (табл. 5.).

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</table>
Среди государств-членов ЕС самый низкий уровень безработицы был зарегистрирован в Нидерландах (3,1%) и самые высокие показатели: в Испании (17,3%), Латвии (14,2%), Ирландии (11,1%), Литве (10,9%) и Эстонии (10,9%).

В середине января 2010 года уровень безработицы в Латвии достиг 16,3%, в базах данных Государственного Агентства Занятости зарегистрировано 182,3 тыс. безработных и всего 1,45 тыс. вакансий, т. е. на одно свободное рабочее место претендуют 125 человек, сообщает Агентство LETA.

6. Анализ динамики численности населения

На фоне увеличивающейся безработицы продолжается фактическая эмиграция населения прибалтийских стран, при сохраняющейся тенденции сокращения ее общей численности.

Как видно из таблиц 6 и 7, прибалтийские страны имеют не только небольшую численность населения, но и ежегодный отрицательный прирост [5].

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Источник: Eurostat [1]

Табл. 7. Прирост населения за период 2008/2009 гг. (чел.)

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</table>

Источник: Eurostat [1]
Среди стран, вступивших в ЕС после 2004 г., наибольшим количеством населения на 1 января 2009 г. обладают Польша (38 103 млн. чел.) и Румыния (21 496 млн. чел.). Численность населения обеих стран постепенно снижается, причем это сокращение началось еще до вступления в ЕС (фиг. 4.).

Среди Балтийских стран по количеству населения лидирует Латвия (3 350 млн. чел.), затем идет Литва (2 261 млн. чел.). Эстония же имеет самый низкий показатель (1 340 млн.чел.). По последним данным на конец 2009 года население Латвии составило всего 2 255 млн.чел.

Отрицательный прирост населения в прибалтийских странах связан с постоянно присутствующей тенденцией низкой рождаемости и превышением показателя смертности над показателем рождаемости. Кроме того, сложившаяся экономическая ситуация провоцирует новый отток жителей стран Балтии за границу.

Наряду с уменьшением численности населения особо острым становится процесс миграции.

По официальной статистике, на данный момент за границей проживают всего 39 тысяч жителей Латвии. Это те, кто пробился на чужбине более полугода и заявил о своем нынешнем месте пребывания в латвийском посольстве. Реальные цифры как минимум в 2-3 раза выше. Различные специалисты и демографы сходятся во мнении, что с момента вступления Латвии в ЕС страну покинули около 150 000 человек.

Эксперты агентства Eurostat прогнозируют, что если в 2010 году общее население Латвии будет составлять 2247000 человек, то в 2030 году на территории страны будут проживать 2033000 человек. Прогнозируется, что за 20 лет в Латвии родится около 452000 детей. В свою очередь, смертность составит 692000 жителей. Страну за этот период покинут 9000 человек. Европейские эксперты также прогнозируют, что на 100 работающих латвийцев в 2030 году будет приходиться 34 пенсионера. В данный момент 100 латвийских работников содержат 25 человек старше 65 лет.

Заключение

Спад мировой экономики болезненно затронул регион Восточной Европы. Наиболее резкие его проявления ощутили страны Балтии: Литва, Латвия, Эстония, в которых в условиях мирового экономического и финансового кризиса наибольшее падение основных макроэкономических показателей. При этом сравнение динамики изменения показателей макроэкономического развития стран Прибалтийского региона показало, что по темпам снижения ВВП, росту инфляции и уровню безработицы лидирует Латвия.

Приходится констатировать, что действующая в этой стране экономическая модель привела к потере экономического суверенитета [7]. Выросшая к концу 2008 года кредитная задолженность финансовых, нефинансовых
институций и домохозяйств Латвии составила 110% от ВВП и достигла того уровня, когда возврат кредитов становится практически невозможным.

Параллельно шло стремительное возрастание внешнего долга, который к концу 2008 года составил 57,6% от ВВП. В условиях кризиса усилилась потребность в сохранении объемов доходов в стране. Государственный управленческий аппарат переложил всю тяжесть этого процесса на малых предпринимателей, наемных работников, получателей пенсий и пособий, в то время как количество чиновников с непомерно высокой оплатой труда выросло за годы существования Латвии в составе ЕС с 6% от общей численности занятых в народном хозяйстве до 7,8% и составила к концу 2008 года 88,3 тыс. человек. Расходы на содержание этого аппарата составили 12,3% расходов бюджета.

В то время, как в борьбе с мировым кризисом многие государства стараются облегчить положение различных социальных слоев общества через снижение налогов, стимулирование предпринимательской активности, повышение социальных выплат населению, латвийское правительство делает все с точностью до наоборот, что уже негативно отразилось на имидже Латвии в глазах мирового сообщества, которое в качестве основных причин углубления экономического кризиса в Латвии называют следующие:

- низкий профессионализм в управлении государством;
- огромный управленческий аппарат чиновников всех уровней;
- коррупция в высших эшелонах власти.

Что касается перспектив выхода стран Балтии из экономического кризиса, то можно утверждать лишь следующее: временной отрезок стабилизации экономики во всех трех странах будет самым длительным из всех стран-членов ЕС. Самые большие потери, как экономического, так и социального характера, ожидают Латвию. Литва и Эстония выйдут из кризиса быстрее за счет усилий их правительств к сохранению социальных гарантий и меньшей степени финансовой зависимости от иностранных кредитов.

В этой ситуации представляется необходимым переход к новой экономической модели, ориентированной на развитие производства, а не на перераспределение финансов. При этом государственные программы по выходу из сложившейся ситуации должны содержать как минимум две составляющие: механизмы стабилизации экономики и программу социально-экономической защиты населения, как основу общей для стран Евросоюза внутрисударственной политики, гарантирующей основные права человека. Существующие антикризисные программы недостаточно ориентированы на указанные моменты, а в Латвии полностью им противоречат.

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ИССЛЕДОВАНИЕ ДИНАМИЧЕСКИХ ХАРАКТЕРИСТИК ИНДИКАТОРОВ УСТОЙЧИВОГО РАЗВИТИЯ АДМИНИСТРАТИВНО-ТЕРРИТОРИАЛЬНЫХ ЕДИНИЦ

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Резюме

Предложены концептуальные основы методики определения динамических характеристик для административно-территориальных единиц, которая основывается на положениях концепции устойчивого развития. Рассмотрены основные моменты динамического моделирования индексов, категорий политики, индикаторов устойчивого развития. На основании полученных данных выработаны рекомендации по принятию управленческих решений на региональном уровне.

Ключевые слова: устойчивое развитие, компаративный анализ, динамические характеристики, экономическая составляющая

Вступление


Системное объединение экономической, социальной, экологической и, теперь уже, институциональной составляющих предоставляет возможность более глубоко исследовать развитие стран. Начало системных исследований было положено на всемирных саммитах ООН при участии более 180 стран и некоторых международных организаций в Рио-де-Жанейро (1992 год) и в Йоханнесбурге (2002 год). Методология расчета показателей устойчивого развития, в том числе экономического измерения, представлена в роботе [3]. Развитие этой методологии вошло в метрику для измерения индексов и индикаторов устойчивого развития в роботе [4].

Вышеуперечисленное касается глобального моделирования, которое отражает положение в рейтинге определенной страны в трех измерениях за определенный период времени, в общем случае – это один астрономический год. Указанное выше объясняется доступностью статистических данных по странах. Для отдельно взятой страны имеется возможность использовать обработку данных помесячно или поквартально, при условии наличия доступа к информации. Для значительной группы стран такие данные могут отсутствовать, к тому же обработать количество наборов данных, увеличенное в 12 раз, представляет определенные затруднения.


Проблемная ситуация и задачи

Вышеуказанные научные наработки в основном рассматривают статику процесса, акцентируя внимание на анализе чисел, характеризующих определенный этап развития объекта. Затем следует сравнение объектов между собой. В конечном результате получаем определенное число, которое, сравнивая со значениями результирующих чисел других объектов, показывают позицию того или другого объекта в рейтинге. Таким компаративным анализом предоставляется возможность оценить положение объекта исследования относительно других. Соответственно, на основе этой оценки, располагая дополнительной информацией, возможным является взвешенно принимать соот-
ветствующие управленческие решения для улучшения того или другого показателя конкретного объекта.

Сравнение конечных значений индексов устойчивого развития на значительном периоде наблюдений не может предоставить количественной характеристики для оценки. Это связано с тем, что при расчетах применяется нормирование и другие математические операции, которые позволяют получить безразмерные величины.

Таким образом, научной задачей является разработка и апробация методики, которая позволит провести комплексный анализ на значительных отрезках времени. Как уже отмечалось выше, для глобального уровня такая задача является сложной в связи с ограничениями доступа к данным. На уровне отдельно взятой страны эта задача относительно простая. К тому же методика расчетов может быть упрощенной. Это связано с показателями, которые характеризуют всю страну и не касаются отдельно взятого региона. То есть статистические данные являются одинаковыми для всех административно-территориальных единиц: налогообложение, денежно-кредитное регулирование, отдельные тарифы и др.

Научной задачей является необходимость комплексного исследования динамики индексов и индикаторов для административно-территориальных единиц, используя концепцию устойчивого развития, определения факторов влияния на изменение значений индексов для определенного региона, области, административно-территориальной единицы. Основными задачами исследования являются разработка концептуальных основ методики определения динамических характеристик индексов, категорий политики, индикаторов и наборов данных с использованием наработок концепции устойчивого развития, апробации этой методики, используя статистические данные Госкомстата Украины, предоставление рекомендаций относительно принятия управленческих решений.

Методология

Теоретическую основу исследования составляет системный подход к анализу динамики экономических процессов на уровне административно-территориальных единиц. Методологическую основу предоставляют методы системного и компаративного анализа, метрика для измерения процессов устойчивого развития. Также используются статистические исследований, элементы прогнозирования, логического обобщения.

1. Основные положения устойчивого развития в глобальном аспекте

В мировой практике экономическая составляющая устойчивого развития формируется с использованием индексов конкурентоспособности (3 индикатора, 47 наборов данных) [1] и индексов экономической свободы (10 индикаторов, 50 наборов данных) [2]. В свою очередь индекс глобальной конкурентоспособности формируется с таких показателей: 1) группа индикаторов базовых требований (Basic requirements); 2) группа индикаторов повышения эффективности (Efficiency enhancers); 3) группа индикаторов инновационности (Innovation and sophistication factors).

В первую группу входят 4 комплексных индикатора: институциональная среда (Institutions); инфраструктура экономики (Infrastructure); макроэкономическая стабильность (Macroeconomic stability); здоровье людей и начальное образование (Health and primary education). Вторая группа состоит из 6 индикаторов: высшее образование и система обучения (Higher education and training); эффективность товарного рынка (Goods market efficiency); эффективность рынка труда (Labor market efficiency); совершенство финансового рынка (Financial market sophistication); технологическая подготовленность (Technological readiness) и масштабы рынка (Market size). Третья группа характеризуется такими индикаторами: совершенство бизнеса (Business sophistication) и инновации (Innovations).

Индекс экономической свободы формируется из таких 10 индикаторов: уровня свободы бизнеса; уровня свободы торговли; уровня фискальной свободы; степени зависимости экономики от правительства; уровня денежной свободы; степени monetарной свободы; уровня инвестиционной свободы; уровня представленности свободы; прав на частную собственность; уровня свободы от коррупции; уровня свободы рынка труда.

2. Диапазонный аспект устойчивого развития

Изменение во времени показателей экономической деятельности для определенной административно-территориальной единицы зависит от ряда экономических факторов, которые условно подразделяются на приобретенные и те, которые исторически сложились. Исторический ракурс предопределяет потенциал
регистрации. Соответственно, возможность приобретения определенного ресурса и реализация потенциала для административно-территориальной единицы зависит, прежде всего, от высшего руководства того или другого региона.

Относительно Украины. Страна занимает выгодное геополитическое положение, имеет значительный научно-образовательный потенциал и производственные возможности промышленности (прежде всего, добывающей и перерабатывающей сфер), возможности агропромышленного комплекса. Как следствие, использование указанных преимуществ является возможным для каждого региона страны в определенной степени.

Оценить развитие отдельной административно-территориальной единицы возможно при использовании динамического подхода, оставляя в расчетах абсолютные значения показателей, не применяя нормирования. Динамика прослеживается по этим абсолютным значениям. После проведения сравнительного анализа возможным является определение относительных величин динамики. В этом случае целесообразно применить нормирование, использовать безразмерные показатели.

3. Основные положения динамической модели экономического измерения устойчивого развития региона

Принципы. Эффективность управленческих решений, их успешная реализация возможна при соответствующей информационной поддержке принятия этих решений. От величины лага времени анализа ситуации в стране и регионе зависит уровень качества этих решений. Соответственно анализ динамики необходимо проводить на значительных отрезках времени с использованием значительного количества статистических данных. В связи с этим предлагаются при формировании методических подходов следовать таким принципам: оптимальность лага времени; возможность измерения экономических величин; взаимосвязанность составляющих; доступность статистических данных.

Основные предпосылки. К основным предпосылкам использования динамической модели принадлежит следующее: проведение социально-экономических реформ и трансформации экономики; неравномерность социально-экономического и технико-технологического развития регионов и областей Украины; развитие взаимных выгодных экономических связей между регионами и областями, возможностью создания предпосылок для успешной торговли, научно-технического сотрудничества; необходимостью согласования потребностей в внутренних и централизованных ресурсах для области и региона.

Составляющие методики. Методика должна включать такие составляющие: приведение массива данных к единой, согласованной форме; учет ограничений при формировании наборов данных; определение и уточнение весовых коэффициентов; проведение предварительных расчетов; анализ промежуточных и конечного результата; предоставление предложений руководству соответствующих структур государственной и местной власти.

Выходы

Поднять уровень конкурентоспособности конкретных административно-территориальных единиц для отдельно взятой страны возможно с использованием адаптированной методики, разработанной на основе концепции устойчивого развития. При этом необходимо учитывать следующие компоненты: возможность получения необходимых данных; учет особенностей объекта исследования; базироваться на выше приведенных принципах, основных предпосылках и составляющих методики.

Научной новизной является предложенный подход к оценке динамики интегрального показателя развития объекта (административно-территориальной единицы), основывающийся на концепции устойчивого развития. Дальнейших исследований требует интерпретация результатов динамического моделирования для административно-территориальных единиц с возможностью изменения лага времени, соответственно, оценки различий в полученных результатах.

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ЗНАЧЕНИЕ СОЦИАЛЬНЫХ ИНТЕРНЕТ-СЕТЕЙ В ПРЕДПРИНИМАТЕЛЬСКОЙ ДЕЯТЕЛЬНОСТИ ДЛЯ ПОВЫШЕНИЯ КОНКУРЕНТОСПОСОБНОСТИ

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Резюме

В работе авторы анализируют феномен социальных сетей или социальных интернет-порталов. Причину и обоснование их возникновения с точки зрения маркетинговой и социологической теории, место и значимость социальных порталов в электронном маркетинге. Главные проблемы, с которыми сталкиваются создатели и пользователи социальных сетей. Авторы предлагают методы исследования социальных сетей и их классификацию. Каковы знания о социальных порталах и предлагаемых ими возможностях, кто является клиентами и пользователями социальных порталов. Каковы возможности использования социальных порталов в предпринимательской деятельности, – какие выгоды могут иметь предприниматели от присутствия данного вида порталов на рынке? Авторы проанализировали влияние социальных порталов на различные активности предприятий, в том числе предложил способы повышения конкурентоспособности предприятия, используя социальные портфели. Изменения в маркетинге, продажах, планировании бизнеса под влиянием социальных порталов. Риски в предпринимательской деятельности при использовании социальных порталов. Перспективы развития отношений между предприятиями и их клиентами в контексте социальных порталов. Авторы анализируют пример социального Интернет портала www.twitter.com. Обобщая вышеизложенное, авторы приходят к выводу, что электронные социальные сети являются серьезным инструментом для работы предпринимателей в электронной среде. Грамотно используя возможности, которые предприниматель может извлечь из сотрудничества с электронными сетями, возможно значительно повысить конкурентоспособность предприятия – расширить каналы продаж и рамки рынка, увеличить объем продаж, апгродировать и выводить на рынок новые продукты или улучшать имеющиеся, анализировать и сегментировать целевую аудиторию, проводить различные маркетинговые мероприятия, развивать e-коммерцию и др. Проанализировав различного вида социальные интернет сети, авторы приходят к выводу, что социальные сети являются важным инструментом для работы предпринимателей в электронной среде и повышения их конкурентоспособности на рынке.

Ключевые слова: электронный маркетинг, социальные портфели, социальные сети, классификация, конкурентоспособность

Социальные сети, социальные интернет порталы – предпосылки их возникновения

Каждый день мы находимся в различных отношениях с разными людьми, таким образом мы создаем социальные сети. Каким образом? Осознать данный факт можно ответив на ряд вопросов. Возможно Вы нашли работу через знакомых одноком и друзей? Возможно у Вас и Ваших друзей общие интересы, которые объединяют вас в какой-нибудь клуб или группу интересов? В конце концов, Вы просто встречаетесь с другими людьми дома, на работе, на улице, а возможно Вы пользователь интернет-портала и находитесь в социальной сети facebook.com. Существует социальной сети в том, что у каждого человека есть связь с другими людьми, которые, в свою очередь, связаны с другими людьми, а те, в свою очередь с другими и т.д.

Таким образом, можно сделать вывод, что социальная сеть - это группа людей и отношениями между ними.

Идею и предпосылки возникновения социальных порталов можно искать в теориях социологии. К примеру, французский социолог Пьер Бурдье в своих работах субъективную поведенчную практику рассмотривает как ограниченно изменяющуюся, т.к. индивиды слишком связаны друг с другом посредством "своего" социального пространства и нормам, действующим в нем [1].

Другой социолог, Джордж Хоманс в своей теории социального обмена выделяет три социальные группы: малые, примарные и секундарные [1].

Главные черты малых групп:
1. небольшое ограниченное число участников;
2. наличие общей цели и мотивации у всех группы;
3. чувство принадлежности группе (мы и они);
4. общие нормы и ценности, которые определяют взаимодействие;
5. дифференцированные социальные роли, которые объединяют единую цель.
Главные черты примарных групп:
1. частые контакты;
2. разного вида контакты (вербальные, оптические и др.);
3. в основном прямые контакты (face-to-face);
4. частые эмоциональные контакты;
5. небольшое количество людей.

Главные черты секундарных групп:
1. редкие контакты;
2. преимущественно косвенные контакты;
3. преимущественно вербальные контакты;
4. преимущественно эмоциональные контакты;
5. большое количество людей.

Анализируя современные социологические теории, автор хочет выделить понятие „глобализация“. Е. Гиденс трактует его так: глобализация – процесс усиления интенсификации социальных отношений и взаимной зависимости [1].

Глобализация означает то, что мы все больше становимся гражданами „одного мира“, что наши действия все больше влияют на других, а действия других – на наши. На сегодняшний день глобализация оказывает влияние на людей во всех странах мира – как в богатых, так и в бедных.

Глобализация охватывает не только экономическую, но и политику, культуру и социальную сферу. Главным двигателем модернизации до сих пор было развитие информационных и телекоммуникационных технологий.

Развитию глобализации способствовали также многие другие факторы. Во-первых, окончание холодной войны и возникновение новых международных и региональных форм сотрудничества способствовали сближению разных народов и стран мира.

Во-вторых, информационные технологии обеспечили свободный информационный поток по всему миру и породили новое глобальное мировосприятие.

В-третьих, количество транснациональных компаний и их влияние увеличилось настолько, что те, создавая производственные и реципрочные сети, трансформировались в межречевые элементы.

Глобализация – открытий и противоречивый процесс, последствия которого очень сложно предсказать и контролировать [1].

Анализируя социологические теории, автор пришел к выводу, что появление социальновых порталов вполне закономерно. Их возникновение стало возможно благодаря развитию современных цифровых технологий. Можно утверждать, что в основе возникновения социальных интернет-порталов лежит с одной стороны современные теории социологии, а с другой стороны цифровые технологии, а именно интернет, вместе с современным маркетингом.

Исследование социальных сетей

Исследование феномена социальных сетей на протяжении многих десятков лет занимает умы ученых в области социологии, особенно в западной социологии, развитие которой происходит стремительно. Интерес исследовательей к сетям связан с новыми разъясняющими моделями и инструментами, которые выходят за рамки традиционно применяемых квантитативных методов. Кроме того, для исследования социальных сетей используется богатый набор математических методов, которые позволяют создать достаточно сложные модели социального взаимодействия, которые описывают практически любые социальные системы.

Считается, что впервые термин „социальная сеть“ применял в 1954 году Джон Барнс (John Barnes) в работе „Class and Committees in a Norwegian Island Parish“, опубликованной в журнале „Human Relations“ [2].

Определяя понятие анализа социальных сетей, автор считает, что это исследование существующих социальных взаимоотношений в группе людей. В отличие от классических методов анализа, которые исследуют индивидуальные особенности людей, основные цели анализа социальных сетей – это исследование взаимодействия между людьми и выяснение возникновения условий этого взаимодействия. Отношения исследуются в контексте со связями между людьми (или группами людей) и их действия считаются взаимосвязанными, а не изолированными. Важно то, что под „связями“ понимается не только коммуникация между людьми, а также обмен различными ресурсами и деятельностями. Таким образом, в социальных сетях возможно множество различных видов взаимодействий.

Центральным аспектом анализа социальных сетей является то, что взгляды, чувства, действия людей, во-первых, созданы не благодаря их собственным качествам, а благодаря тому, в какого рода отношениях они участвуют. Главная идея в концепции „сети“ то, что у
каждого человека имеется связь с другими людьми, которые одновременно связаны с какими-то другими людьми и так по цепочке, таким образом, социальная сеть связана с группой людей и взаимоотношениями между ними.

Существуют разные методы анализа и оценки социальных сетей — как качественные, так и количественные или квантитативные.

Качественные методы исследования — неструктурированные исследования или поисковые исследования, которые позволяют собрать и анализировать подробную, детальную информацию о исследуемом объекте.

Количественные методы исследования — главная цель данных исследований — сбор объемного количества информации для последующей обработки и анализа, в том числе статистического анализа. Собранная информация после ее обработки используется также для проведения качественных исследований.

Те или иные методы выбираются в зависимости от целей исследования, а также количества исследуемых участников социальных сетей. Немаловажен также факт, какие существует возможность получения информации и степень ее доступности.

Автор считает, что для анализа социальных сетей наиболее удобны качественные методы исследования: опросы и анкетирование, интервью, наблюдения.

Анкетирование применяют в том случае, когда количество исследуемых участников социальной сети достаточно большое и информация, которую планируется получить должна быть стандартизирована и структурирована, а также должна быть собрана за короткий период времени. Анкета обычно содержит вопросы о связях респондентов с другими людьми.

Интервью. Окные или интервью по телефону обычно используют в случаях, когда всю необходимую информацию о социальной сети не удается получить посредством анкетирования. Углубленные интервью особо полезны в тех случаях, когда необходимы более детальные пояснения или уточнения респондентов, а также в случаях, когда число респондентов невелико.

Наблюдение. Данный метод широко применяется для исследования малых групп — для анализа людей, между которыми происходит процесс прямого взаимодействия. Так как данные получены путем наблюдения этого взаимодействия, и в данном случае не нужны вербальные ответы респондентов на вопросы, поэто
tому данный метод применяем в случаях, когда у исследуемых людей нет возможности ответить на вопросы не устно не письменно. Метод наблюдения также помогает понять различные психологические и поведенческие особенности и аспекты данной социальной сети [3].

Анализ документации. Взаимодейственные связи можно исследовать также используя различные зафиксированные опубликованные данные о них — документы, архивы, дневники и т.д. Зачастую такого вида данные позволяют исследовать процессы взаимодействия, происходящие в прошлом и сравнивать их с процессами, происходящими в настоящем. Таки образом, например, была исследована принадлежность женщин тем или иным организациям в 19 веке. Исследователи использовали так, каким образом эта принадлежность разным организациям пересекалась. Список женщин и их принадлежность создавался используя регистрационные журналы о принадлежности 202 женщин 1015 организациям [3].

Благодаря современным цифровым технологиям и интернету, социальные сети все чаще становятся неотъемлемой частью повседневной жизни людей, количество которых ежедневно увеличивается. — посредником в их взаимодействии.

Находясь в той или иной социальной сети, у людей имеется более широкий доступ к различным ресурсам (в том числе информации), которые не были бы доступны при поиске их своими силами. Таким образом, исследование социальных сетей может быть полезным для предпринимателей в проведении различных маркетинговых и PR кампаний — чтобы знать, по каким каналам эффективнее и быстрее передать послание потенциальным и уже имеющимся потребителям и клиентам. Важно также знать в каких социальных интернет-порталах находится целевая аудитория.

Виды социальных интернет-порталов

В маркетинге, как в классическом, так и в традиционном существует множество способов и видов классификации, например, классификации виды маркетинга; потребители и их поведение; мотивы потребителей; товары и услуги; а также многие другие факторы, объекты и т.д. Классификация производится по различным критериям и параметрам. Поскольку главные участники социальных интернет-сетей это люди, которые одновременно являются потребителями или потенциальными потребителями, автор
рассмотрит различные способы классификации потребителей, существующие в маркетинге и предложит свою классификацию социальных интернет-сетей.

Ф. Котлер предлагает классифицировать потребителей по следующим признакам [4]:
– уровень дохода;
– возрастные группы;
– географический принцип;
– психографический принцип;
– поведенческий принцип.

Д. Блайт классифицирует потребителей в зависимости от их [5]:
– географических характеристик;
– психографических характеристик;
– социально-экономических характеристик;
– демографических характеристик.

Ф. Котлер, Д. К. Джайн и С. Майсини потребителей классифицируют в зависимости от их прибыльности и выделяют следующие группы потребителей (см. Фиг. 1).

На фиг. 1. показаны два способа классификации прибыльности потребителей: один – ситуация в настоящем, другой – в будущем [8].

Фиг. 1. Классификация прибыльности потребителей

Ученые предлагают также следующую классификацию клиентов в зависимости от их ценности для компании с точки зрения приносящей ими выручки [6]:
– „платина“ (топ-группа) – 1% наиболее активных потребителей;
– „золото“ (крупные потребители) – следующие за „платиновой“ группой 4% активных клиентов;
– „железо“ (средние потребители) – следующие 15% активных потребителей;
– „свинец“ (мелкие потребители) – остальные 80% активных потребителей.

Социальные интернет-порталы в зависимости от их предназначения автор предлагает классифицировать следующим образом:
1. **контактные социальные интернет-сети** (linkedin.com, plaxo.com, partnerpedia.com и др.);
2. **коммуникационные каналы** (facebook.com, myspace.com, draugiem.lv, wordpress.com, youtube.com, face-link.ru и др.);
3. **каналы продажи** (amazon.com, ebay.com и др.);
4. **инструменты бизнеса** (google.com, google.com, twitter.com, alibaba.com и др.).

**Деловые и контактные социальные сети и интернет-порталы**

Главные цели социальных интернет-порталов – обеспечение взаимной коммуникации и обмен информации между людьми делового мира.

Главные функции социальных бизнессетей:
– установление новых деловых контактов;
– наличие или создание бизнес профилей предприятий, их руководителей и/или работников, а также отдельных предпринимателей, а также людей, причисляющих себя к деловому миру;
– линки на блоги предпринимателей;
– предложения о вакансиях, возможности поиска работы;
возможности получить результаты разли
личного вида экспертиз и исследован
ий;
создание и наличие различных деловых
дискуссионных групп и др.
Предприниматели могут использовать сле
dующие выгоды от участия и использование
dанных социальных сетей для повышения своей
конкурентоспособности:
создание и получение множества разли
чных деловых контактов, к тому же с
gруппированных, например, потенци
альние покупатели, поставщики и пос
редники. Также можно использовать дельовые контакты для различных видов
консультаций в обоих направлениях — как получать, так и оказывать, напри
мер, юридические, финансовые, маркетинговые и др.;
возможность оценки и измерения опе
ративности коммуникационных про
цессов в реальном режиме;
возможность оценки и измерения ре
зультатов двусторонней коммуникаци
и;
возможность оценки и анализа разли
чных затрат — на рекламу, марке
tинговые мероприятия, продвижения и др.
Ярким примером успешной деловой соци
альной интернет-сети на сегодняшний день явля
Число участников портала на момент на
писания работы составляло 32 мил. пользова
телей, которое по сравнению с 2008 годом возросло на 1092% [6].
Главные особенности портала: регламен
tированное количество знаков сообщения — 140 символов. Возможность осуществления переговоров в реальному времени. Возможность следовать и следить за высказываниями экспертов, клиентов и потенциальных клиентов о различных событиях, например, мнение об услугах и товарах — в том числе критику.
В качестве примера как социальный биз
нес интернет-портал влияет на конкурентоспо
собность предприятия, автор приведет два ре
альные случая, которые помогут осознать зна
чимость социальных сетей
Пример первый
Недовольные клиенты оператора, предос
tавляющего потребителям телекоммуникацион
ные услуги — интернет, голосовую связь и ка
бельное телевидение, создали профиль
www.twitter.com/izzisucks. В течение коротко
го времени и ним появился 277 единомыш
ленников. В различных блогах, прессе и инт
ernet-порталах появилась информация о нека
чественных услугах компании. Компания не
реагирует на негативные высказывания своих
клиентов, никаким образом не решает данную
проблему. В результате почти 300 клиентов
обращаются к прошению в обществе прав за
щиты потребителей и расторгают договора с
компанией. В тоже время нужно отметить и
положительную сторону возникшей ситуации. Многие пользователи портала www.twitter.com, которые до появившейся информации не знали
данную компанию, запомнили ее, заинтересо
вались брендом, посетили домашнюю страницу
в интернете, ознакомились с услугами компа
нии. Не подсчитано, какие убытки или выгоды
приобрела компания от данного вида коммуни
cации, так как в тоже самое время, компания
получила и новых клиентов, количество ко
торых более 100.
Пример второй
Отец ребенка, которого положили в боль
ницу на лечение, в www.twitter.com/lielie пи
шет об ужасающих условиях в данной детской больнице. В течение пяти часов виртуально собрались люди, поддержившие отца и пожерт
вовали 300 латов на приобретение термомет
ров, лекарств и прочего. Была создана группа учета
ников и последователей к которой в течен
ие двух недель присоединились более 300
единомышленников и которая привлекла вни
мания прессы и были собраны еще 2000 латов
пожертвований.
Данные примеры свидетельствуют о боль
шом влиянии социальных интернет порталов на
создание общественного мнения, а также то,
какое влияние они могут оказать на развитие
предпринимательской деятельности. Предпри
нимателем нужно менять свое мышление и
всерьез воспринимать данные социальные инт
ernet-сети и использовать широкие возмож
ности, которые они дают для развития бизнеса.
Социальные интернет-сети предлагают также
ряд инструментов, которые можно использо
вать в предпринимательской деятельности:
коммуникационные платформы и плат
формы сотрудничества (BaseCamp, Google Wave);
ведение различных процессов (продажи, продвижения и пр.) их контроль, учет, обмен данными, создание виртуальных
рабочих групп (Facebook, Linkedin ир.)
осуществление связи (Skype, MSN пр.);
открытые общие пользовательские программы (Google Doc’s пр.);
различные микроуслуги для прямой связи с клиентами, потенциальными клиентами и партнерами;
В организациях, которые используют или хотят использовать электронную среду для развития предпринимательской деятельности должны быть высокий уровень культуры коммуникации, а также осознание командной работы (collaboration). Предприниматели должны обладать навыками и знаниями в работе в электронной среде. У них должно быть четкое понимание ответственности в работе с социальными сетями, так как разные процессы в них происходят и развиваются стремительно и предпринимателям нужно уметь управлять данными процессами и быть ответственными за результат.
Польза, которую может получить предприниматель от использования социальных сетей следующая:
− оптимизация и оценка коммуникационных процессов и их стоимости;
− создание модели командной работы в коллективе, который приведет к улучшению работы компании;
− совместное с клиентами решение проблем;
− анализ оперативности и продуктивности работы в рамках команды;
− контроль рабочего времени и соответствия оплаты работникам выполняемым ими функциям.
Социальные сети для развития бизнеса: как каналы коммуникации и продвижения
Как уже было сказано в работе, людей объединяют: интересы, ценности и взгляды. Тоже самое можно отнести и к социальным интернет-сетям. Социальные интернет-сети являются местом, где люди могут встретиться с другими людьми; ответить на вопросы, таким образом, возможно помогая другим людям; а также задать вопросы и прислушаться к мнению других.
В зависимости от действий и активности участников в социальных интернет-сетях, автор предлагает разделить их на три группы:
1. участники, которые сами создают оригинальное содержание;
2. участники, которые комментируют, цитируют, гопол-суют и др. содержание, помещенное другими, за него и пр.;
3. участники, которые только потребляют содержание (информацию) опубликованное другими.
Социальные интернет-сети можно использовать для продвижения товаров и услуг, а также как инструмент симметричного общения с клиентами или потенциальными клиентами.
Социальные интернет-сети как каналы коммуникации:
− возможность создания групп сторонников и поклонников торговой марки;
− возможность обращения к точной целевой аудитории в "их" среде;
− возможность быстрого получения информации об актуальных потребностях и интересах потребителей;
− возможность получения критики о продуктах и услугах и возможность реагировать на нее и др.
Социальные интернет-сети как каналы продажи:
− возможность виртуальных "прямых продаж" - продажа продуктов или услуг в "эпицентре социализации" целевой аудитории (например, продажа услуг страхования, билетов, информационных продуктов и банковских услуг и т.д.);
− трата более короткое время на продажу товара или услуги – при условии, что потребитель принял решение о покупке, например, на основании отзывов других участников сети;
− повышается скорость предоставления клиентам сервиса и др.
Обобщив вышеизложенное, автор пришел к выводу, что электронные социальные сети являются серьезным инструментом для работы предпринимателей в электронной среде. Грамотно используя возможности, которые предприниматель может извлечь из сотрудничества с электронными сетями, возможно значительно повысить конкурентоспособность предприятия – расширить каналы продажи и рамки рынка, увеличить объем продаж, апробировать и вывести на рынок новые продукты или улучшать имеющиеся, анализировать и сегментировать целевую аудиторию, проводить различные маркетинговые мероприятия, развивать э-commerce и др.
Заключение

Обобщая все вышеизложенное, в заключении автор хочет заострить внимание на важности социальных сетей. Социальные интернет-сети стали неотъемлемой частью повседневной жизни большинства людей во всем мире. Потребность в создании социальных сетей у людей появилась еще до возникновения интернета и электронных социальных сетей, о чем свидетельствуют различные социологические исследования.

Важным катализатором развития социальных сетей является процесс глобализации, охватывающий все сферы деятельности - экономику, политику, культуру и социальную сферу.

Следующий этап развития социальных сетей связан с развитием телекоммуникационных технологий в том числе интернета. Благодаря интернету появилось множество социальных интернет-сетей, объединяющих множество людей в зависимости от их интересов во всем мире. Главной особенностью электронных социальных интернет-сетей является двусторонняя двусторонняя коммуникация с обратной связью между их пользователями.

Для лучшего понимания социальных сетей, а также возможности их использования в предпринимательстве, сети необходимо исследовать, используя различные методы. Благодаря возможностям и особенностям интернета, исследования можно проводить в разных масштабах и на различных уровнях в зависимости от потребностей и целей предпринимателей.

Для наилучшего использования социальных интернет-порталов и сетей автор предлагает их классифицировать в зависимости от их предназначения.

Проанализировав различного вида социальные интернет-сети, автор пришел к выводу, что социальные интернет-сети являются важным инструментом для работы предпринимателей в электронной среде и повышения их конкурентоспособности на рынке.

Важно помнить, что процесс коммуникации в электронной среде происходит очень стремительно и различного вида новости и информация - как позитивная, так и негативная, распространяется очень быстро. Именно поэтому предпринимателям необходимо быть не только компьютерно грамотными, а также прекрасно орентироваться в киберпространстве и знать, как работать с различными инструментами электронной среды - порталами, в том числе и социальными, поисковыми системами, базами данных и пр.

Литература

ВЛИЯНИЕ ИНФОРМАЦИОННЫХ ТЕХНОЛОГИЙ НА ПОТЕНЦИАЛ ПРЕДПРИЯТИЯ

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Резюме

Статья посвящена исследованию проблем эффективного функционирования предприятия и повышения его конкурентоспособности в условиях высокой конкуренции и неопределенности. Рассмотрено место и значение информационных технологий в структуре потенциала и их роль в процессе оптимизации формирования потенциала предприятия и его использования.

Ключевые слова: потенциал, информация, информационный потенциал, технологии, развитие

Вступление

Роль информационных технологий (ИТ) в индустриальном и, особенно, постиндустриальном обществе постоянно возрастает. Информация становится товаром, наличие которого в большой степени определяет будущее предприятия. Информация и полученные, посредством ее, знания реализуются в новых средствах труда, технологиях, профессиональном опыте работников, уровне организации производства. Эффективное хозяйствование предприятий Украины, рациональное использование их потенциала невозможно без соответствующего современным требованиям информационного обеспечения.

Сегодня большинство организаций и фирм в развитых странах во всех секторах промышленности, торговли и услуг основывают свою деятельность на информационных системах. Информационные технологии стали неразрывно связанными с бизнесом во всех проявлениях. Для отраслей телекоммуникации, медиа, развлечений и финансовых услуг, где продукты часто оцифрованы, вся суть существования организации зависит от эффективного применения информационных технологий. С появлением электронной коммерции, использования ее становится простым путем для осуществления бизнес-операций. Актуальность информационных технологий увеличивается из года в год и для производственных организаций. Новые программные продукты позволяют не только планировать и контролировать сам процесс производства, но и упрощают сотрудничество с покупателями продукции, поставщиками, сбытовыми сетями. Таким образом, предприятия на сегодняшний день все чаще воспринимают новейшие инновационные технологии как средство обеспечения достижения конкурентных преимуществ.

Конкурентные преимущества предприятия, его рыночная позиция и вопросы лояльности его клиентов особенно актуальны в рамках стратегического управления в условиях нестабильности внешней среды, неопределенности и риска, динамичными изменениями, как в процессе, так и в предложении, высокого уровня конкуренции вместе с ограниченностью ресурсов, динамизмом микро- и макроэкономических показателей, отсутствием развитой рыночной инфраструктуры. Современные реалии функционирования предприятия требуют не только детального анализа его внутренней среды и реагирования на внешние изменения, но и поиска новых направлений деятельности на основе определения, формирования и развития его потенциала.

В современных экономических условиях успешная реализация концепции стратегического развития предприятия в значительной мере зависит от эффективного использования его потенциальных возможностей. Последние формируются под непосредственным влиянием факторов внешней и внутренней среды предприятия и ориентируют его на достижение долгосрочных целей развития в соответствии с имеющимся ресурсным обеспечением.

В разрезе формирования и использования потенциала предприятия внедрение информационных технологий не только требует определенного начального уровня экономического потенциала, без которого их использование в будущем не будет эффективным и целесообразным. В результате такого внедрения, также, повышается общий уровень потенциала предприятия, что способствует его дальнейшему развитию. Вопрос взаимозависимости и взаимодействия...
твия потенциала предприятия и деятельности по внедрению информационных технологий был не достаточно освещен в научной экономической литературе и требует дальнейшей разработки.

Исследование различных аспектов информационных технологий в разрезе их использования в экономике посвящены работы украинских ученых Березы А. М., Гордиенко И. В., Гужвы В. М., Пинчука Н. С., Галузинского Г. П., Орленко Н. С. Твердохлеба М. Г. и др. Вопросы формирования и эффективного использования потенциала предприятия получили освещение в работах Федонина А. С., Репина И. Н., Олексюка А. И., Должанского И. З., Кунцевича В. О., Ганущака Л. М. и др. Среди зарубежных ученых на внимание в разрезе потенциальных возможностей предприятия относительно информационных технологий заслуживают работы И. Ансоффа, П. Друккерра, Р. Гранта, Ж. Пеппарда (J. Peppard), Ж. Варда (J. Ward), П. Ж. Щера (P. J. Sher), В. С. Лее (V. C. Lee), Д. Бенкерра (D. Bankerta) и др.

Постановка задачи
Обосновать целесообразность применения категории „информационный потенциал“, исследовать его природу и структуру как составляющей экономического потенциала предприятия и проанализировать эффективность и целесообразность внедрения информационных технологий с целью повышения потенциала предприятия.

Методология
Методической базой исследования является научная литература в составе научных статей, монографий, пособий, автобиографий, диссертаций. В работе используются такие общие научные методы: анализ, синтез, комплексный подход и др.

Результаты исследования
В современной экономической теории компания рассматривается как открытая система, которая зависит от факторов внешней среды и должна гибко реагировать на их изменение. Задача предприятия соответственно постоянно осуществлять мониторинг и прогноз возможных угроз, которые имеют влияние на его функционирование. Чем сложнее и более неопределенным является окружающая среда, тем более целесообразным становится внедрение информационных систем, помогающих осуществлять мониторинг, прогнозирование, планирование и, на их основе, эффективное управление.

Согласно определению Ассоциации информационных технологий Америки (ITAA) информационными технологиями называется изучение, разработка, развитие, применение, поддержка или управление информационными системами, базирующими на основе компьютерных технологий, а именно, программным обеспечением и аппаратным компьютерным обеспечением [6].

Необходимо также отметить актуальность использования информационных систем для предприятий Украины, так как экономическая среда Украины характеризуется значительной степенью неопределенности и динамизмом (с ухудшением экономической ситуации за мирового экономического кризиса 2009).

Неопределенность рыночной среды формируется под влиянием различных факторов: временная неопределенность обусловлена тем, что невозможно точно предсказать значение того или иного фактора в будущем; неизвестность точных значений параметров рыночной системы можно обозначить как неопределенность рыночных конъюнктуры; непредсказуемость поведения участников в ситуации конфликта интересов и т. д. [2].

Поскольку неопределенность выступает источником риска, ее следует минимизировать, за счет получения качественной, достоверной, исчерпывающей информации, ее накопления и анализа. Именно здесь решающее значение играют информационные технологии как средство сбора, хранения и обработки информации, и ее эффективного использования предприятием. Последующий анализ информации, накопления опыта предприятием, просчет перспективных возможностей и оптимальных вариантов их использования окажут положительное влияние на долгосрочную рентабельность за счет постоянного обновления, привлечения новых ресурсов, разработки новых товаров и выхода на новые рынки. Нужно принимать решения по обеспечению ресурсами таких долгосрочных потребностей, как исследования и разработка, обучение руководства, создание новых производственных площадей и покупка оборудования.

По мнению И. Ансоффа проблема многих предприятий - это неполнота информации, что приводит к проблеме выделить или описать все будущие возможности по покупке или созданию.
перспективных товаров и технологий в момент принятия решения [1].

Назначение информационных систем заключается в переводе бизнес-стратегии компании в долго живущую информационную архитектуру, технологическую инфраструктуру и планирования ресурсов, позволяющих ее внедрения [7].

Эффективное управление в современных экономических условиях является задачей стратегической, что определяется тремя элементами: прогнозирование будущих проблем и возможностей предприятия во внешней среде; прогнозирования характера возможностей предприятия, необходимых для успешной деятельности и управления ними; адаптация потенциала предприятия к непредвиденным изменениям внешней среды [3].

На фиг. 1. представлена логическая последовательность влияния внедрения и последующего использования информационных технологий, которые можно представить как комплекс информационных активов, на различные виды потенциала. Информационные технологии в разрезе предприятия разделяются на внешние и внутренне ориентированные. Такое распределение основывается на различных спектрах используемой информации (внешняя и внутренняя информации по отношению к предприятию). Внешне ориентированные информационные системы работают с информацией о ситуации на рынках сбыта продукции, конкурентов, потребностей и требований клиентов и т.д. Внутренне ориентированные направлены на сбор данных, анализ и оптимизацию информации о производственных процессах, финансовой, операционной деятельности.

В то же время как показано на фиг. 1. внешне ориентированные системы (CRM (Client relationship management), e-commerce, market research) имеют наибольшее влияние на маркетинговый потенциал предприятия, т.е. их использование его потенциально увеличивает. Внутренне ориентированные системы (ERP (Enterprise resource management), APS (Advanced Planning & Scheduling), Accounting support) имеют влияние и увеличивают управленческий и производственный потенциалы. Два вида систем совместно влияют на инновационный, трудовой и финансовый потенциалы.

В то же время нужно отметить, что недостаточное началное развитие зависимых видов потенциала делает нецелесообразным внедрение новейших информационных систем. Так, по консалтинговым исследованиям компании Bain & Company (www. bain.com) 79% компании, внедрившие ERP системы, отметили, что потенциал такого внедрения не использован эффективно, а 70% CRM проектов не дали видимых результатов в прибылях. Такие данные, по нашему мнению, указывают на не готовность большинства компаний к увеличению их информационных возможностей из-за недостаточного развития потенциала других функциональных систем и подразделений.

Таким образом, внедрение информационных технологий и повышение информатизации с одной стороны увеличивает рентабельность предприятия в долгосрочной перспективе и улучшает конкурентные позиции на рынке, но, также, требует заблаговременного принятия решений относительно формирования и развития определенных необходимых составляющих его потенциала. Под потенциалом предприятия мы понимаем совокупность ресурсного обеспечения предприятия и комплекса возможностей по их использованию для достижения поставленных целей и задач предприятия. Развитие, обновление и перспективы применения информационных систем, инновационных технологий, различных видов информации, их оптимизацию целесообразно выделить в информационный потенциал предприятия (ИТ потенциальные возможности в зарубежной литературе), формируемый на основе ИТ активов (ресурсы, интеллектуальные возможности, связи) (см. Фиг. 1.).

В украинских научных изданиях существует несколько подходов к определению сущности категории информационный потенциал. Так, Федонин О. С. определяет его как единство организационно-технических и информационных возможностей, обеспечивающих подготовку и принятие управленческих решений и влияющих на характер (специфику) производственного посредством сбора, хранения (накопления), обработки и распространения информационных ресурсов [5]. Другой источник под информационным потенциалом подразумевает доступ к адекватному количеству информации, которая влияет на принятие управленческих решений [4].
По нашему мнению более целесообразным является определение информационно-го потенциала, основанного на понимании общего потенциала. Под инновационным потенциалом мы понимаем совокупность информационных ресурсов предприятия и возможности их использования для хранения, передачи и обработки информационного массива данных качественно, быстро и надежно для достижения поставленных целей предприятия. Если брать в качестве основы стратегическое ориентирование предприятия на нужды потребителя, то целью формирования информационного потенциала будет максимальное удовлетворение и формирование лояльности клиента для достижения устойчивых конкурентных преимуществ в долгосрочном периоде. При таком подходе возникает потребность в качественной информационной политике в отношении предприятия, его клиентов, конкурентов, сборе данных относительно потребностей рынка, коммуникации с клиентами компании, накопления и структуризации данных по ним.

Выводы

Была разработана структурно-логическую схему взаимосвязи информационных систем (общих направлений программных продуктов, предлагаемых на ИТ рынке) и потенциала предприятия. Предоставлено авторское понимание категорий „потенциал предприятия“ и „информационный потенциал“ с обоснованием целесообразности применения последней категории в экономике предприятия.

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МЕТОДОЛОГИЧЕСКИЕ АСПЕКТЫ ПОНЯТИЙ „ТОРГОВАЯ МАРКА“, „БРЕНД“, „ГУДВИЛЛ”

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Резюме

Современный этап развития мировой экономики характеризуется все большим интересом компаний к созданию или улучшению комплекса своего фирменного наименования, так как дорогие нематериальные активы очень сильно влияют на финансовую отчетность предприятия, его рейтинг и стоимость акций. Руководители учреждений по-другому стали рассматривать торговану марку, бренд, гудвилл. Выводя их стоимость в активы, компания увеличивает свою инвестиционную привлекательность, имеет возможность оценить управленческий учет и работу руководителя. Внимание таким нематериальным активам уделяется не только потому, что позволяет принять правильное решение относительно покупки или продажи бизнеса, но и потому, что способствует эффективному распределению ресурсов в компании.

Рассмотрим детальне методологические аспекты понятий, которые являются главными составляющими нематериальных активов компаний. Первое и самое базисное понятие – это торговая марка. Торговой маркой может быть любое обозначение или любая комбинация обозначений, пригодных для отличия товаров, которые производятся другими лицами. Такими обозначениями могут, в частности, быть слова, буквы, цифры, изображающие элементы, комбинации цветов. Вторым, более популярным и широким понятием, входящим в состав нематериальных активов является бренд. Бренд – это символ, базирующийся на торговой марке, стили, слогане, воспринятый покупателем, несущий в себе совокупность эмоциональных элементов, которые являются целостными с самим товаром. Бренд – это ценность и философия торговой марки, которые существуют у покупателя. Торговая марка становится брендом только тогда, когда связь между конкретным товаром и покупателем становится более тесной.

Критерий, благодаря которому торговая марка превращается в бренд - это мнение широкого круга населения, это знак того, что покупатели уже ориентируются не только на торговую марку, но и на качество, стабильность и имя производителя. Гудвилл представляет собой совокупность нематериальных факторов, которые позволяют конкретной компании иметь определенные конкурентные преимущества в бизнесе и за счет этого генерировать дополнительные доходы и денежные потоки. К таким факторам относится: фирменное наименование компании, ее репутация на рынке, технологическая и управленческая культура, налаженные связи с контрагентами, выгодное территориальное месторасположение, качество обслуживания клиентов.

Ключевые слова: торговая марка, бренд, гудвилл, нематериальные активы

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На сегодняшний день мы сталкиваемся с проблемой некорректного использования понятия торговая марка. В повседневной жизни можно встретить разные названия: логотип, эмблема, корпоративная или фирменная мар-
ка, торговая марка, товарная марка, торговый знак, слоган, фирменный знак. Все эти термины призваны дать одно определение – комбинации обозначений для отличия одних товаров от других.

Вторым, более популярным и широким понятием, входящим в состав нематериальных активов является бренд. Бренд – это символ, базирующийся на торговой марке, стиле, слогане, воспринятый покупателем, несущий в себе совокупность эмоциональных элементов, которые являются целостными с самим товаром. Бренд – это ценность и философия торговой марки, которые существуют у покупателя.

Классик теории и практики рекламы Дэвид Огилви дает следующее определение бренду – это неоценимая совокупность свойств продукта: его имени, упаковки и цены, его истории, репутации и способа рекламирования. Бренд также является совокупностью впечатлений, которое он вызывает у покупателей, и результатом их опыта в общении с брендом. Торговая марка становится брендом только тогда, когда связь между конкретным товаром и покупателем становится более тесной по сравнению с аналогичными товарами на рынке. Критерий, благодаря которому торговая марка превращается в бренд - это мнение широкого круга населения, это знак того, что покупатели уже ориентируются не только на торговую марку, но и на качество, стабильность и имя производителя [7].

Бренд – понятие достаточно широкое и его структура включает следующие элементы:

– суть бренда – главная характеристика бренда, легенда;
– атрибуты бренда – набор ассоциаций (звуковых, визуальных, эмоциональных), это продолжительные ассоциации, которые составляют индивидуальность бренда и даются бренду покупателями или потенциальными клиентами;
– образ бренда – это мгновенная характеристика, то есть ощущения, которые возникают в данный момент у покупателя. Если имидж бренда формируется и изменяется при помощи рекламной кампании, то индивидуальность бренда остается неизменной продолжительное время;
– товар или услуга с их характеристиками;
– информация про покупателя;
– отношение покупателя к товару [7].

Товарный знак – это основа бренда, и на эту основу нанизываются другие элементы – имидж, репутация, престиж, конкретный объем и виды рекламных мероприятий. Таким образом, исходя из практики экономических отношений, положений экономической теории и маркетинга, а также юридически закрепленных видов способов индивидуализации, можно прийти к выводу, что бренд является более широкой категорией, чем товарный знак. Он включает в себя торговую марку и коммерческое наименование, а также впечатление от этих объектов (легенда, философия бизнеса), которое существует в подсознании покупателя или ценности, которые ассоциируются с ним, и характеризуется высоким уровнем известности.

С экономической точки зрения бренд отличается от торговой марки тем, что имеет более долгий жизненный цикл, приносит дополнительную прибыль, позволяет освоить новые сегменты рынка, расширить ассортимент товаров [7].

Иногда понятие бренда используют вместо понятия “торговая марка” или для того, чтобы подчеркнуть, что торговая марка имеет определенный имидж, который включает и авторитет и деловую репутацию фирмы, которая производит товар.

Третьим понятием, которое мы рассматриваем в данной статье, является гудвилл. Долговечный перевод этого термина – добрая воля, то есть добрая воля покупателя учреждения, который переплатил некоторую сумму денежных средств за право контроля над чистыми активами компании, которую он купил, в сравнении с их “справедливой” рыночной стоимостью.

Гудвилл представляет собой совокупность нематериальных факторов, которые позволяют конкретной компании иметь определенные конкурентные преимущества в бизнесе и за счет этого генерировать дополнительные доходы и денежные потоки. К таким факторам относятся: фирменное наименование компании, ее репутация на рынке, технологическая и управленческая культура, налаженные связи с контрагентами, выгодное территориальное месторасположение, качество обслуживания клиентов и др. Данные факторы могут быть позитивными и тогда компания имеет позитивный гудвилл, или негативными – негативный гудвилл. Положительная деловая репутация рассматривается как надбавка к цене, уплачиваемая покупате-
Существует владение и комбинация, позволяющая служить, высоко прибыльна, и ее доходы превышают средний уровень в данной отрасли.

В большинстве случаев оценка брендов прибегает к оценке брендов, а к оценке гудвилла – в момент окончания торгов с потенциальным покупателем.

Следуя из вышесказанного, мы можем сделать выводы о том, что на сегодняшний день существует много различных понятий, определяющих комбинации обозначенных для отличия одних товаров от других. Самым распространенным и официально закрепленным является понятие торговой марки. Однако данное понятие дает лишь узкое обозначение и выделение одного товара от других при помощи слов, букв, цифр, изображающих элементов, комбинации цветов. Торговая марка – это базис, основа более широкого и вестительного понятия бренда. Бренд, помимо составляющих торговой марки, включает в себя уровень известности среди покупателей, качество товара или услуги, репутацию, стабильность. Следовательно, торговая марка может стать брендом только при эффективном использовании всех нематериальных активов предприятия.

Наконец, понятием, которое полностью захватывает и объединяет термины торговая марка и бренд, является гудвилл. Гудвилл - это, прежде всего, общественное мнение по отношению к названиям, стилям, помещениям, товарным знакам, логотипам, проектам, товарам и любым другим предметам, находящимся во владении или под контролем компании, а также отношения с клиентами и заказчиками. Гудвилл можно представить как совокупность факторов, которые побуждают клиентов вновь прибегать к услугам данной организации [10].

В общем гудвилл включает такие понятия, как престиж торговой марки, опыт деловых связей, устойчивость клиентуры, высокие моральные качества служащих и другие подобные факторы, которые содействуют увеличению способности компании извлекать доходы выше среднего уровня в своей отрасли. В узком же понимании, гудвилл - это, прежде всего, мнение целевой аудитории о названии, стиле, товарном знаке, логотипе, бренде, проектах, товарах и любых других предметах, находящихся в чьем-то владении [10].

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